Assessing Qatar's Readiness and Potential for the Development of a Knowledge Based Economy: An Empirical Analysis of its Policies, Progress and Perceptions

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ASSESSING QATAR'S READINESS AND POTENTIAL FOR THE DEVELOPMENT OF A KNOWLEDGE BASED ECONOMY: AN EMPIRICAL ANALYSIS OF POLICIES, PROGRESS AND PERCEPTIONS

by
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Abstract:

Post-industrial societies are distinguished by the development of knowledge and its use both as an economic commodity and as a means to create new technologies in order to attain and maintain a competitive edge. With the support of economic strength, effective institutions that include labour, product, and capital markets, and human capital, developed industrial nations have transformed their economies into knowledge-based economies (KBEs) through the allocation of funds for research and development (R&D), innovation, and technological development. The open nature of these economies with enhanced competition policies has also contributed to the development of a KBE in these particular countries.

Qatar, as one of the oil-rich countries in the Gulf Cooperation Council (GCC), has been focusing on strategies to diversify its economy beyond its traditional emphasis on oil and gas. Although these sources of revenue have been instrumental in the unprecedented success of the Qatari economy, even to the extent of avoiding the notion of the 'resource curse', the sustainability of generating wealth via alternative methods remains a challenge for Qatar and other similar countries. Indeed, the development of a KBE is perceived as such an alternative for Qatar; for which the country has initiated a number of strategies among its economic, financial, education, and regulatory sectors.

This study, thus, aims to explore the notion transforming Qatar into a KBE as a means to enhance economic diversity, thereby investigating the nature of, and developments in, the macro and micro business environments of the country and its economy. The policies of the Qatari government are also similarly explored, so as to identify Qatar's readiness to become a KBE. Further, this study aims to gauge the perceptions of Qatari university students towards the idea of a KBE, detailing their awareness of the Qatari government's policies for such an economy and their expectations for the future of Qatar.

To fulfill the research aims and objectives of this project, a quantitative research method is predominantly employed to analyse the primary data. Initially, the World Bank's specialist Knowledge Assessment Methodology, or KAM, will be used in relation to secondary data, so as to assess Qatar's readiness for becoming a KBE in comparison to other potential economic competitors. Despite the demonstration of Qatar's strength arising from its economic variables, the KAM results show that when compared to other countries, Qatar faces certain challenges, including in the areas of innovation and human resources. Although the recent institutional changes have been encouraging, additional policies should be developed to reiterate these efforts. Correspondingly, developments related to education and training should also be continued in order to support this transformation into a KBE.

The research was further expanded to investigate the opinions of Qataris with regard to Qatar's need for a KBE and its readiness for this transformation; an enquiry was similarly made into these individuals' understanding of 'knowledge', the concept of a KBE, and into their own efforts towards this transition. To this end, a questionnaire survey was conducted in order to gather primary data from university students; the results indicate that their awareness and attempts to develop themselves are rather limited. Further, the results illustrate that this demographic group is not absolutely convinced by the positive impact of Qatarisation, even though most of the students questioned thought that Qatar should adopt a KBE. And yet these same students' knowledge of Qatar's policies for the creation of a KBE was limited.

Qatar's policies for diversifying its economy should ultimately be perceived as a step in the right direction; the transition to a KBE, however, still requires further strategic planning and the bold implementation of these strategies. The economic strength of the country is considered to be a foundation on which such an aforementioned future can be built, notwithstanding the obstacles posed by human resources at present, especially when given the lack of trust displayed for the policy of Qatarisation by the participants of the questionnaire. The shortcomings in institutionalisation in the economy should also be considered as an important obstacle.

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DECLARATION

I hereby confirm that this thesis is a result of my original work. None of the materials in this thesis has previously been submitted for any other degrees in this or any other university.

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

1.1 BACKGROUND

Many countries are currently undergoing a transformation from the status of product-focused experts in manufacturing to service-oriented knowledge economies. This transition among the global economies is mainly due to the position of computerisation, automation, Information Communication Technology (ICT), and e-commerce as the foundation for contemporary globalisation. A knowledge economy regards education, intellectual capital, technology, innovation, efficiency, and productivity as the most important elements of the economic workforce (Solow, 2011). Although capital and labor have always been the two main factors of production, technology and the skills and knowledge that are related to applying it to the economic structure are considered to be the third most important element. Investment in increasing the capabilities of a population's human intellectual capital is now one of the most crucial strategies that governments can implement to develop their societies into knowledge economies, which are then able to gain competitive advantages over other countries for international business opportunities (Romer, 2005).

Worldwide expansion has made many countries realise that the considerable international service industry opportunities can now be capitalised on. This transition is also due to production being much cheaper in developing countries such as China and India, where labour and manufacturing plants have much lower overheads. Industrialised nations cannot compete with such cheap production, since they are subject to higher quality standards and governmental regulations. For these reasons, many countries are moving away from manufacturing or industrial economies and towards the concept of knowledge-based economies (KBEs) in order to remain

globally competitive. Countries in Europe and Asia are thus focusing on developing their own KBEs according to business models from the United States of America (USA), which is considered to be the most efficient knowledge economy worldwide.

Qatar, as a member of the Gulf Cooperation Council (GCC), has in recent years demonstrated enormous economic progress, growth, and development; this has been financed by the high revenues received from oil and gas export. As a result of this process, Qatar now has the highest GDP *per capita*, thereby marking it as an economically successful society. Such an achievement is equally the product of policies developed by the Qatari government over the years to diversify the economy in order to create a sustainable society that does not rely on oil revenues. Indeed, the sustainability of Qatar can only be possible with economic diversification. Given the diminishing nature of oil and gas reserves and when considering the small size of the country, Qatar has to diversify further in order to be able to survive.

The Qatari economy in recent years has focused on creating a highly educated and skilled society of nationals and foreign expatriates. Qatar has attracted many respected foreign universities to the country, alongside a considerable number of multinational corporations that provide superior services for advertising, marketing, customer service centres, ICT services, computer-related services, and real estate service provision. In addition, these multinational corporations also possess highly efficient and sophisticated financial and banking services.

As part of its policy for diversification, the Qatari government has focused on the creation of a knowledge economy. Indeed, with the collaboration of numerous global strategic alliances, the Qatari government intends to offer additional educational and job skills training, so that the country's population is better prepared for its role in the workforce. To this end, the policy of Qatarization plays an important role, aiming to increase the amount of available employment positions for Qatari nationals. The success of such policies is, however, determined by the need for Qatari nationals to be fully qualified in terms of job skills and experience in the workplace. Qatarization policies therefore have to be complemented by a knowledge economy; education and training must also be geared towards such an objective through investments in research and development (R&D) and innovation. Consequently, Qatari authorities have in recent years developed new strategies that involve various local and foreign

research institutions, such as the Qatar Foundation, which has become a major global research funding body.

1.2 THE SIGNIFICANCE OF A KBE FOR QATAR

The significance of a knowledge economy is that it provides new opportunities for a country such as Qatar to capitalise upon within the service sectors. A knowledge economy focuses on acquiring information that can be turned into knowledge, which can then be applied to the local society in order to upgrade its global market positioning. Qatar's Knowledge Management (KM) is just one of several new information infrastructures that have been recently developed to adapt to the growing demands of an e-economy. To achieve the desired objectives, Qatar's KM needs to become the regional e-learning hub, recruiting overseas professionals to establish an advanced, technologically-viable, ICT-based education system. The need to engage respected researchers and teachers for institutes of higher learning and to set up innovation centres, "think tanks", and sophisticated research centres, is essential for Qatar's efforts to transform itself into a KBE. Qatar should also increase computer-based online and offline schooling to integrate this KM into the school curriculum.

The Qatari government has been promoting an ICT culture and a KBE to the people of Qatar, since information infrastructure knowledge will soon become a major part of their lives. The Qatari people must be willing to allow the penetration of such KBE understanding into their private domains in order to be able to integrate the KM for the long-term benefits. According to the government's policies, Qatari society must become an e-society that uses e-commerce, e-learning, and e-knowledge to create the type of atmosphere that KM will thrive in, so as to support the sustainable growth of Qatar's economy and society. A population that has a strong awareness of the overall benefits of the KBE and the KM system will be the most productive and efficient community in the world, provided that the people adhere to the learning objectives.

Although the importance of a KBE for Qatar has been emphasised by academics and policy makers, there is hardly any concrete information available on the subject to provide a critical understanding of what Qatar has actually done so far to develop a KBE. Crucially, there is no literature from which people, especially the younger generation, can acquire information on the concept of a knowledge economy or on the

policies developed by the Qatari government for the purpose of creating a KBE. Consequently, these are the main concerns that have prompted this research.

1.3 THE GOVERNMENT OF QATAR AND THE PROFILE OF THE COUNTRY

Qatar is located in the Arabian Gulf and it is a strong oil and natural gas producing member of the GCC nations, which are the third largest contributors of natural gas and oil worldwide. Qatar is, moreover, one of the ten wealthiest countries in the world. The Qatari government is an absolute monarchy; it is, however, gradually adopting a more constitutional approach to governance as it becomes more modernised. Although there are no political parties or elections allowed in Qatar, the government does allow a voting process for the election of municipal politicians for Qatari nationals. Emir Hamad bin Khalifa Al Thani is the ruler of Qatar, the head of the state, and also the leader of the entire Qatari government. Furthermore, Qatar has an executive branch to its government, with a prime minister who is similarly selected from the Al Thani royal family.

Qatar gained its independence in 1971 and its leadership is passed down from generation to generation throughout the royal family. Qatar is not only one of the most modern, educated, and wealthy societies in the Middle East, but it is also undergoing a major restructuration, transforming from a traditional Arab Muslim society into a contemporary welfare state with a modern and competitive global economy (Biehl, 2008). Various governmental departments have been created to adhere to the many new requirements of the local society, which include the addition of new economic, educational, and political reforms, and employment policies.

Qatar has been expanding the personal freedoms of its citizens, such as freedom of expression and freedom of the press, which distinguishes it as very modern within the Middle Eastern region (Biehl, 2008; Frankfort, 2008). Correspondingly, Qatar is considered to be one of the most liberal Middle Eastern nations and it has been ranked highly on civil liberties and political rights within the Freedom in the World 2010 listings. Qatar has also been very supportive of many western countries' political and economic issues in the past. For example, Qatar donated (and still continues to donate) over $100 million to the efforts for Hurricane Katrina relief and to many other

global humanitarian charities; on a similar level, it contributed to the reconstruction of Lebanon after the Israeli incursions in 2006 (Hussein, 2011: 1-5; Peterson, 2011: 1-5).

1.4 AIMS, OBJECTIVES, AND RESEARCH QUESTIONS

This research intends to explore the notion of creating a KBE in Qatar as a means to enhance economic diversity. Thus, this research aims to investigate the nature of, and developments in, the macro and micro business environments of Qatar and its economy. The policies of the Qatari government will be similarly explored so as to identify Qatar's readiness to become a KBE. This study further aims to measure the perceptions of Qatari university students towards the idea of a KBE, their awareness of the Qatari government's policies for such an economy, and their expectations for the future of Qatar; or in other words, on Qatar's potential to become a KBE and the issues arising from Qatarization policies. Given that university students are considered to represent an important stakeholder in Qatar's knowledge economy, it is expected that such primary data will add further value to the research in terms of measuring the support given to the KBE policies by the youth. This study also intends to identify the challenges facing Qatar in its attempt to become a KBE.

In the fulfillment of these aims, the following objectives are correspondingly developed:

(i) To explore the meaning and aspects of a knowledge economy and its contribution to economic development;

(ii) To locate and examine the nature of the Qatari economy, its growth and development, alongside its economic diversification policies;

(iii) To analyse the efforts being made in Qatar towards the attainment of the status of a knowledge economy;

(iv) To explore the readiness of Qatar for its transformation into a KBE through the World Bank's (WB) Knowledge Assessment Methodology (KAM);

(v) To collect primary data through a questionnaire survey that will examine the views of the university youth of Qatar on its economy, the concept of a knowledge economy, and on Qatar's transition to a KBE;

(vi) To develop recommendations for creating an efficient KBE in Qatar by making reference to the findings of this study.

In relation to the identified research aims and objectives, the following research questions are developed throughout the study:

(i) What is the level and nature of economic growth and development in Qatar?
(ii) Can the Qatari economy be considered as ready to become a KBE?
(iii) What are the opinions of university students, who are essentially the future of the country, on the knowledge economy, the Qatari economy in general, and on the transformation of Qatar into a KBE?

The first research question is explored in Chapter 5 through a descriptive analysis that identifies the level and nature of the economic growth and development in Qatar with regard to a KBE.

The second research question is answered via Chapter 6, where the WB's KAM is used to assess, from a critical perspective, Qatar's readiness for becoming a KBE and its current progress towards that end.

The third research question is answered in Chapters 7 and 8, where extensive analysis, based on the primary data collected from Qatar university students via a questionnaire, documents the perceptions of the issues involved in this study.

1.5 RESEARCH METHODOLOGY

This research has been established by the use of both qualitative and quantitative research methodologies. Indeed, the measurement of the participants' opinions through the use a questionnaire identifies the study's qualitative nature, yet the use of the WB data set and methodology to measure Qatar's readiness for becoming a KBE also indicates its quantitative aspect.

In terms of research design, this project should be considered as an explorative case study, since it solely aims to investigate the policies of the government and the opinions of the youth on the nature of a knowledge economy, alongside an exploration of the readiness of the Qatari economy for a KBE.

With regard to the research strategy employed here, an inductive research focus shapes the direction of this study, as the collection of secondary and primary data from the field constitutes the way that data or real life is connected through a theoretical understanding.

The research method refers to the tools used to collect and analyse data. For this particular research, quantitative and qualitative methods of data collection and analysis are thus employed. Collecting primary data through a questionnaire and its subsequent analysis via statistical methods indicates the quantitative nature of this study. In addition, the collection of secondary data in the form of various statistics further points to the quantitative nature of the study. And yet the interpretation of the results of this study, combined with the nature of the initial chapters, ultimately identifies the qualitative aspect of this project.

1.6 AN OVERVIEW OF THE THESIS

After this initial introductory section, Chapter 2 will in turn offer a literature survey, explaining what exactly a knowledge economy and KM are in relation to Qatar. Attention will also be paid to the explanation of the different areas of KM innovation, which can be used in supply chain management, and how these strategies can be used in economic development. It will also provide detailed explanations of the major concepts that are related to KM and the theoretical models used to explain them.

Chapter 3 extends this discussion on the impact of a KBE's economic development by discussing the mechanism through which this transformation can take place. It thus places particular importance on the economic development aspect of a KBE, rather than on its economic growth, thereby assuming that a KBE is very much related to economic development. Other countries that have managed to adopt KBEs are also explored via some brief case studies.

Chapter 4 presents the research methodology and the processes behind this study, its design, strategy, and methods; it further offers a detailed presentation of the data collected and analysed.

Chapter 5 illustrates Qatar's economic development and its diversification into non-oil sectors by identifying the trajectories for these elements of its expansion. This

chapter also employs global indices to demonstrate the globalisation and internationalisation of Qatar, explaining the recent efforts made by the country as it strives to become a KBE.

Chapter 6 functions as the first empirical section in this study, examining the readiness of Qatar to become a KBE through the use of the WB's KAM, which provides a comparative perspective on the performance of, and the progress made by, Qatar towards the status of a knowledge economy. Although Qatar's achievements are noted, it is, however, emphasised in the discussion presented here that there are a number of challenges remaining for Qatar before it becomes a KBE.

Chapters 7 and 8 provide detailed statistical analysis of the data collected from Qatari university students through a questionnaire based on various aspects of the research questions raised in this study. This data includes the students' opinions of the Qatari economy and of a knowledge economy in general, on Qatar's readiness for the status of a KBE, on Qatarization, and ultimately of the potential benefits and adverse impacts of these developments. Chapter 7 thus presents a descriptive statistical analysis, whereas Chapter 8 focuses on analytical statistical methods.

Chapter 9 contains the conclusion, which provides an interpretative discussion of, and some policy suggestions for, Qatar's efficient transition to a KBE.

CHAPTER 2

KNOWLEDGE, KNOWLEDGE MANAGEMENT (KM), AND THE KNOWLEDGE-BASED ECONOMY (KBE): A LITERATURE SURVEY

2.1 INTRODUCTION

In the course of history, those societies that have produced knowledge in any of its forms have managed to remain superior to other nations, states, and civilisations. Due to these knowledge-production-related superiorities, the Muslim world led development and growth for a long time, until the Reformation and Renaissance periods in Europe. These developments provided Europe with the opportunity to generate knowledge and remain at the top of economic growth and development. It thus seems that producing and making use of knowledge determines the current and future development of any society.

Knowledge is the valuable insight, skills, and expertise that are gained when information, experience, and education are attained and understood (Godin, 2003; Gold, 2006). Information is, moreover, words, facts, data, and explanations about different topics (Brinkley, 2006; Gopal and Gagnon, 1995).

Awareness of information and its attainment is the method by which knowledge can be acquired in an information society; developing this information into knowledge necessitates being capable of applying it in a suitable manner, whenever it is needed, and being able to understand its significance (Hidalgo and Albors, 2008; Asgeirsdottir, 2006).

The use of this available knowledge by developing firms places them at the cutting edge of competition and increases the value that they add to the economy. Furthermore, the reference to a "knowledge economy", or "knowledge-based economy" (KBE), is related to how knowledge can be continuously enhanced in order to increase growth within an economy, by developing the best practices and new, efficient, and effective ways of doing things. The post-industrialist society is therefore associated with creating additional knowledge for economic growth.

Although Qatar does not have any significant industry, the nature of its economy, based on oil and gas revenues, has prompted it to develop alternative ways of generating wealth to ensure the sustainability of its economy and society in the face of depleting oil and gas resources. In addition to its economic and financial diversification, Qatar's move to become a KBE is a strategy that is intended to provide further growth in the future.

This chapter thus aims to provide a literature survey on knowledge through its definition and by describing the nature of a KBE; this focus will later shift to the concept of knowledge management (KM) in preparation for the empirical research of this study.

2.2 THE CONCEPTUAL DEFINITION OF KNOWLEDGE

Knowledge is an object that can be viewed, stored, and manipulated via portals and websites that are accessible to employees. With regard to its dynamic nature, knowledge is described as a process of simultaneously knowing and acting that applies expertise to employees' competencies, which in turn implies the necessity of managing knowledge. In other words, knowledge is access to information where its organisational content must be managed in order to ensure both its accessibility and its ability to be retrieved (through portals).

The relevant literature indicates that there are many different types of knowledge, such as 'know-how', 'know-what', 'know-who', and 'know-why'; these various types result in the true belief of actual knowledge (Kaplan, 2000; Lundvall and Johnson, 1994).

In this, 'know-what' refers to description (such as knowledge about 'facts'). "Here, knowledge is close to what is normally called information – it can be broken down into bits and communicated as data" (Lundwall, 2000: 4). While information in factual norms is useful, it is not enough to be considered as an asset. Therefore, it has to be processed in the form of input to produce knowledge in the form of, for example, innovation.

As for 'know-why' type of knowledge, this "refers to knowledge about principles and laws of motion in nature, in the human mind and in society" (Lundwall, 2000:4). It is such knowledge that results into technological development leading to growth and development, as this help to gain competitive advantage. This constitutes the critical aspects of generating knowledge from the available information.

While information requires a process to be transformed into knowledge to be useful to develop technology and innovation, critical knowledge in the form of 'know-why' should partly be available for being used in every day life in economic and other activities. Therefore, 'know-how' "refers to skills – i.e. the ability to do something" (Lundwall, 2000: 4), which helps to utilise the technology and innovation generated through knowledge in conducted everyday life. This does not imply relegating the value of information and skills, as these two are the essential components of knowledge resulting into innovation and developing technology.

'Know-what', 'know-how', and 'know-why' as forms of knowledge that needs relational knowledge so that knowledge generated within individual and organizational capacities can be extended for the general use, as "know-who involves information about who knows what and who knows what to do. But it also involves the social ability to co-operate and communicate with different kinds of people and experts" (Lundwall, 2000: 4). Thus, 'know-who' manages the dissemination of information by bringing all the ingredients of effective knowledge to produce growth and development.

In addition, knowledge can also be classified in the following forms according to the features and natures (Bond, 2002: 61-66):

(i) Collective – group-shared knowledge;

(ii) Explicit – explained knowledge;

(iii) Implicit or tacit – implied knowledge;

(iv) Procedural – explanatory knowledge with instructional steps;

(v) Propositional – intended knowledge;

(vi) Visual – illustrated knowledge.

Referring to its dynamic nature, Howells (2002: 872) alternatively emphasises that knowledge is a dynamic framework or structure through which information can be stored, processed, and understood, so that it is used effectively to generate new, efficient, and effective practices, which will contribute to a sustainable economy and society through a KBE.

There are various perspectives of how knowledge, taken from information, can be stored and used within the KM strategic framework, thereby explaining its significance in the workplace. Skyrme (2008) states that KM represents an understanding gained through the experience or study of an organisation or industry.

As part of KM strategies, knowledge has the potential for influencing future action, giving employees in the industry the capacity to use information, which by extension causes them to develop learning and experience from interpreting the data and applying it to the decision making process (Bray, 2010: 42-49; Alavi, 2010: 111-124; Skyrme, 2008: 23-26; McIntyre, 2010: 89-93).

KM is essential in the changing global political economy, since knowledge has become an important asset throughout the world, replacing the traditional means of production, including industry, manufacturing, and manual labour processes, with automation, so as to increase efficiency and productivity.

In terms of the value of knowledge, it is known as a strategic risk aversion tool for avoiding economic downturn and for promoting ongoing education worldwide. When knowledge is managed, it can be used to protect the global society by providing valuable awareness of future trends and problems. In addition, knowledge can help

the global society avoid major disasters that can be detrimental to the whole world, such as environmental problems or terrorist acts.

2.3 DEFINING AND DESCRIBING A KNOWLEDGE ECONOMY: FOUR PILLARS

According to Arvanitidis and Petrakos, 'economic development is, and always has been knowledge-based, however, the scope and significance of knowledge for economic processes has fundamentally changed over the last few years' (Arvanitidis and Petrakos, 2011: 15). Indeed, regardless of the size and nature of any economy, it will be based on knowledge (Smith, 2002). What emerges as the crucial difference today is 'the degree of information and knowledge incorporated into economic processes, [which has caused] substantial structural changes in the way that the economy operates and is organised' (Arvanitidis and Petrakos, 2011: 16). Thus, the nature and use of knowledge in economic processes has resulted in new rules, practices, institutions, and organisational structures, whereby the knowledge economy as a new economic structure itself has emerged.

Since the production and use of knowledge has economic consequences, knowledge is also considered to be an "economic good", in that it contributes to economic growth and development. With the increased emphasis on technology and connectedness, economic wealth is not only limited to industry and manufacturing, but also to the creation, use, and distribution of knowledge. Successful economies are thus considered to be KBEs.

The most technologically developed contemporary societies are considered to be KBEs, since they manage to produce and distribute knowledge as a commodity; these countries are also considered to be prominent nations with sophisticated Information and Communications Technology (ICT), which thereby fosters the most open societies in terms of global connectivity (Boulding, 1996). For the post-industrialist societies, the balance between knowledge and resources has consequently shifted towards knowledge; this shift has therefore determined that the new channels of wealth generation are 'more than land, more than tools, more than labour' (World Bank, 1998: 17).

It should also be noted that the move towards a knowledge economy represents a major shift from the way that knowledge's role in the economy has been previously identified, indicating a direct link both as a substance and as a process (Soete, 2006). In this paradigm shift, the essential issue is the suggestion that knowledge is a commodity (Drucker, 1998; OECD, 1999). When compared to previous iterations of the economy, knowledge is here endogenised into the entire economic process, thereby implying that 'economic principles can be applied to its production and exchange, [and that] knowledge can be produced and used in the development of goods (or even of itself), which means that it is an input in the production process' (Arvanitidis and Petrakos, 2011: 16). Further, this paradigm shift towards the concept of a knowledge economy is associated with the role of ICT, as it facilitates the creation and transferability of knowledge in an efficient and effective manner (Lundvall and Foray, 1996). Thus, through ICT, the accessibility of knowledge to all sectors and agents in the economy has become easier and more cost effective. An additional aspect of this paradigm shift is linked to the innovation process, for as Arvanitidis and Petrakos argue, 'today, innovative capacity is related (to a great extent) to the ability to combine systematically, and make new uses of, existing knowledge, rather than discovering new technological principles (Arvanitidis and Petrakos, 2011: 17). It is therefore not the development of new knowledge that plays a significant role in the economic processes, but its combination and reorganisation. This description illustrates the operational core of the knowledge economy, which requires sophisticated technology and new structures to disseminate knowledge. A KBE ultimately emerges then as a result of these paradigmatic shifts in the economy and society.

The KBE is thus defined by the OECD (1996) as an 'economy which is directly based on the production, distribution, and use of knowledge and information'. By definition, this implies that the characteristics of a KBE are dynamic and efficient knowledge creation, and access and distribution for the increased momentum of innovative developments and opportunities (Godin, 2003). In other words, a KBE is defined as the 'production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance, as well as an equally rapid obsolescence' (Powell and Snellman, 2004: 201). These characteristics also

contribute to sustainable growth, productivity, and to continuous learning and innovation.

A KBE signifies a change in economic practices, for as Foray (2006: 9) states, the 'knowledge economy is an economy in which much greater strategic importance is given to the allocation of resources in the following areas: research and development (R&D) and other formal modes of knowledge creation; the formation of human capital through education and training; the management of information, knowledge, and expertise through investments in codification and the building of social networks; and, the organisation of markets of rights in knowledge'. These various elements constitute the features of a KBE, yet they simultaneously provide a new understanding of the topic with the objective of enhancing effectiveness and efficiency to develop the economy and society. Foray (2006: 9) concludes that 'the knowledge economy is, therefore, a useful framework for speaking of changes related to the production and distribution of knowledge in modern societies'. In support of this notion, Asheim and Coenen (2005, 1174) rationalise the idea of a KBE through the suggestion that knowledge is the strategic resource for competition and determines the progress of nations.

The important factors that shape the KBE are related to strong economic progress and development, which can be expressed through the following economic fundamentals (Asgeirsdottir, 2006: 18):

(i) Stable macroeconomic policies that allow long-term planning;

(ii) Well-functioning labour, product, and capital markets;

(iii) Efficient training policies which help to ensure that the less educated members of society are equipped with the right skills, thereby avoiding the concept of the 'knowledge divide';

(iv) Competition policies, which drive down the cost of technologies;

(v) Liberalisation of telecommunication policies;

(vi) Openness to trade and foreign direct investments (FDIs), so as to let in new ideas.

These economic fundamentals are dependent on additional factors in order to create and determine the development of a KBE; which are called the four pillars, as described in Figure 2.1 (Asgeirsdottir, 2006: 18):

(i) A business environment conducive to the development of a KBE;

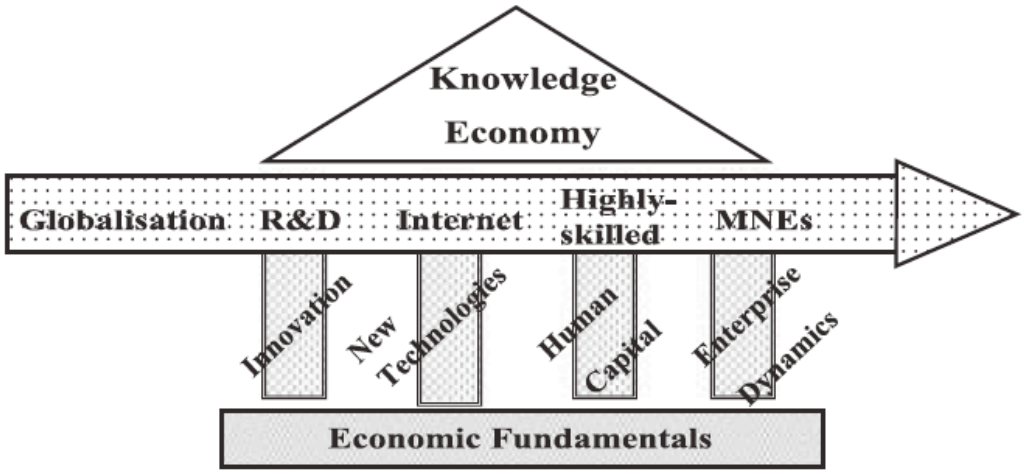
(ii) New technologies, including Information and Communication Technology (ICT);

(iii) The innovative policies, institutions, and incentives necessary for the development and commercialisation of domestic and foreign innovations, or, in other words, for the creation of a national innovation system;

(iv) Human resource development, especially in terms of the development of a national education system that generates a pool of knowledge specialists and a technology-literate work force.

In summary these 'four pillars' are: 'innovation', 'new technologies', 'human capital', and 'enterprise dynamics'

Figure 2.1: Determinants of a KBE



Source: Asgeirsdottir (2006: 18).

In addition (and as can be seen in Figure 2.1), further factors are essential to initialise the four economic fundamentals necessary to the establishment of a KBE. According to Asgeirsdottir (2006: 18-19), innovation requires R&D; new technologies can be

operationalized through the Internet; human capital policies have to produce highly skilled individuals and labour; and, enterprise dynamics should generate successful multinational enterprises. All these factors also require global connectedness in the form of globalisation.

In addition to such macro perspectives, 'new organisational innovations and KM practices have to be developed to heighten the benefits of the knowledge economy' (Asgeirsdottir, 2006: 22). In other words, this new economic paradigm would require new structures and business practices that can be operationalised in innovative organisations. Thus, the basis from which a knowledge economy could use the economic fundamentals efficiently in order to produce the four essential pillars would be that of the aforementioned innovative practices, wielded by the previously specified organisations. This includes private and public sector management practices to generate those outcomes, thereby leading to the development of a KBE.

As has been already indicated, the concept of a KBE will determine the shape, nature, and operation of future economies; its features can be summarised as follows:

(i) Knowledge can be considered an "economic good" to which economic principles can be applied in terms of its production, distribution, and consumption as an endogenised process or input. Thus, knowledge is the new source of economic value and growth;

(ii) A 'knowledge economy is based on the generation and exploitation of knowledge so that it plays the principle role in the creation of wealth' (Department of Trade and Industry, 1998);

(iii) 'A knowledge economy entails the most effective use and exploitation of all types of knowledge in all manner of economic activities' (Department of Trade and Industry, 1998);

(iv) 'The idea of the knowledge-driven economy does not simply equate to a description of high tech industries, instead it describes a set of new sources of competitive advantage which can apply to all sectors, companies, and regions, from agriculture and retailing to software and biotechnology' (Charles Leadbeater, 1999, cited by Brinkley, 2006: 4).

(v) ‘The knowledge society encapsulates a larger concept than just an increased commitment to R&D. It covers every aspect of the contemporary economy, where knowledge is at the heart of value added, from high tech manufacturing and ICT, through knowledge-intensive services to the overtly creative industries, such as media and architecture’ (Kok Report, 2004);

(vi) A knowledge economy describes the new emerging economic structure.

After identifying the nature and components of KBE, the following section focuses on various aspects of a KBE and KM.

2.4 DEVELOPING A KNOWLEDGE ECONOMY

A society’s transformation into a knowledge economy is dependent on the completion of certain key phases that are associated with its ability to adapt to the changes in a country’s economic structure (Asgeirsdottir, 2006; Firestone, 2010).

The overall comprehensive strategy for KM implementation relates to how data can be changed into information, for it increases awareness and is then learned to become knowledge. Experience of a subject is thus gained as the subject itself is being explored, thereby enabling the attainment of wisdom, which will eventually become expertise about the knowledge studied and which can be taught for the purpose of its social application. This process reflects how a knowledge society is created, since information can be transformed into useful knowledge through educational learning and work experience.

Knowledge creation is only possible when knowledge is available; people are consequently more aware of the information that they are in search of at that particular moment. As a result, it is essential that knowledge should be accessible to everyone; educational opportunities are therefore necessary for the creation of a knowledge economy. Knowledge societies are learning communities where people improve themselves and their individual capabilities through educational and employment experiences. In terms of KM, knowledge is the acquisition and understanding of information as an interchangeable resource that must be gained by everyone so that a proper balance of wealth distribution is achieved. Knowledge economies are possible when they are developed within a networked society that

exhibits connections between educated people and companies, which in turn demonstrate the knowledge creation and knowledge sharing of individual and collective information (Davenport, 2008: 114-126; Firestone, 2010: 228-241).

2.4.1 Knowledge Acquisition

The creation of a knowledge economy initially depends on the generation or acquisition of knowledge.

The most important features of KM include the attainment and incorporation of the following factors:

(i) Benchmarked best practices – these are the global standards of knowledge acceptance;

(ii) Collaboration – teamwork, coordination, and cooperation for knowledge sharing;

(iii) Culture – cultural experience and applications for knowledge;

(iv) Human element – the integration of the personal qualities of people into KM to make it more useful on a global level;

(v) KM intranet portal – an online, secure, and internal means of web access that also functions as an employee communication tool;

(vi) Knowledge sharing – the provision of information for others and allowing access to this information, so as to enable the acquisition of data;

(vii) Value – the significance and worth of knowledge and its benefits to the surrounding society (Hill, 2002: 92-98; Parlby, 2010: 133-149).

With new technological advances, digital automation, a variety of useful ICT devices, and online internet accessibility, knowledge societies are more possible than ever before, as the acquisition of knowledge has become easier. This notion is especially pertinent given that the acquisition of more knowledge translates to the attainment of a greater understanding of what is required in the global society so that it can be suitably implemented.

In terms of a knowledge economy, the key to the future of the global society is that the majority of the population should create and share their knowledge with the rest of the world. The provision of a global access system to knowledge via online e-learning will make it available for people of all social levels to use as an educational tool to enhance their own individual nation. The most significant characteristic of a knowledge society is that it encourages continuous educational learning for everyone. This provides unlimited opportunities for employment and enables the development of the entire economy within all its sectors (Grant, 2010: 55-67).

2.4.2 Continuous Learning Programs for Encouraging Knowledge Transfer

Ongoing learning programs to encourage knowledge transfer across the world will help everyone adapt to the changing dynamics of the future global knowledge society.

Knowledge societies based on continuous learning will employ education as the foundation for the elimination of poverty, illiteracy, joblessness, homelessness, tyranny, discrimination, and oppression. In addition, these societies will help to balance the equality and fairness factors that are needed for equal educational and employment opportunities worldwide, which will result in a decrease in racism, sexism, ageism, and general discrimination.

The integration of knowledge is the basis for an international society where job skills and educational degrees are provided for people of all ages in every country. Educational learning programs will use knowledge and expertise to prepare people for the global workforce. Indeed, the development of a global knowledge workforce requires coordinating educated, skilled, qualified, and experienced workers who share knowledge and information with each other, and who teach it to those who lack it. Universal access to knowledge from global knowledge sharing between countries and people will foster an environment of continuous learning worldwide, with both individual and group participation as the cornerstone of the development of the knowledge society (Pierce, 2010: 169-188).

2.4.3 KM & Knowledge Creation in Project Management

KM involves various aspects of knowledge creation in the context of the business models of multidisciplinary projects; it also extends to include the overall benefits it

has for organisations that want to have continuous learning programs for their employees. The emphasis is then on how collective knowledge, used by teams within an organisation, can be a valuable asset for long-term success.

There are five main processes of knowledge creation: boundary crossing, knowledge sharing, knowledge generation, knowledge integration, and collective project learning. The development of new products can be upgraded by applying KM problem-oriented solutions. Knowledge creation provides these solutions in the form of a shared belief system that arises from the social interaction of employees. A framework can be presented that relates how knowledge creation within multidisciplinary project teams offers an interrelationship between tacit and explicit knowledge. There are, however, many differences between the Western and Asian influences on this topic. Knowledge creation thus allows for the transfer of knowledge to the wider environment through products, patents, and people. Most western organisations tend to focus more on individuals, whereas Japanese firms have a more group-oriented culture (Gold, 2010: 83-86; Skyrme, 2008: 220-229).

Although there are many theoretical frameworks with regard to knowledge creation, which in turn directs KM, it is difficult to evaluate the significant differences between tacit and explicit knowledge and how it relates to organisations. Paulson (2010) describes a recent research study by the New York Institute on how new knowledge can be integrated into organisations by combining both internal and external information. This study does, however, state that Western organisations are not good at internalising learning in teams. It is well known that Western corporations have been leaders of the global industry in teamworking, especially in relation to KM. There should then be more theories supporting how KM will encourage greater knowledge creation through the gathering, sharing, storing, and distribution of information within organisations.

The Knowledge Conversion Process Model illustrates how collaboration in multidisciplinary project teams is essential to knowledge creation. When explaining the boundary crossing aspect of knowledge creation, it is clear that there are certain types of obstacles, which some team members encounter, that prevent knowledge creation. Team members also have different disciplines, making the crossing of these boundaries impossible. KM encourages knowledge creation through the suppression

of these barriers to communication between team members, which is the key to developing a knowledge organisation. Some references have been made by Harris (2009) to learning organisations and organisational learning theories, since they directly relate to this concept (Gold, 2010: 83-86).

According to Williams (2010), knowledge can be transferred to others through many different ways. Some of the methods used to this end include the notion of sequential transfer, where experience from a particular project is invested in other projects, and centre to inter-project learning. Another technique of transferring knowledge is through repetition, which helps to increase the chances of remembering something. Inter-project learning is explained as an area from which it is possible to gain knowledge from certain projects and then transfer it to other projects. KM provides an excellent framework for how knowledge creation can help multidisciplinary project teams be more efficient and productive (Gold, 2010: 83-86; Skyrme, 2010: 173-185).

2.4.4 Applying KM Strategies to the Global Society

In the contemporary global society, an organisation's capacity for applying KM strategic approaches to their daily routine allows them to gain a competitive advantage over rivals in that particular industry. KM integrates several different elements to make it efficient; these elements include human resource management (HRM) and management information systems (MIS). The application of KM techniques to organisations requires the implementation of an intranet portal in order to upgrade the technological learning process. Globalisation has made long-term competitive success possible through the attainment of technological learning linked to KM intranet portals (Alavi, 2010: 52-56).

These intranet portals are integrated into organisations that are then able to develop, maintain, and apply competitive advantages through technological advancement in order to survive in the international business world. This situation occurs because globalisation has created a high level of globally-benchmarked best practices, meaning that companies wishing to get ahead of competitors must have value-added capabilities in their products and services. KM coordinates technological learning programs through intranet portal implementation, so that companies always have

access to the latest strategic approaches to gain competitive advantage in their specified industry (Hingston, 2010: 12-14).

2.4.5 Collaborating KM Strategies

According to McCormack (2010), KM is a collaboration of HRM and MIS with the aim of supporting the application of ICT capabilities within companies through the integration of intranet portals. Effective KM integration involves an overall HRM restructurisation, anticipating and meeting consumer needs, and encouraging employee job satisfaction. HRM consolidates KM by forcing organisations to upgrade their recruitment process, motivational incentives, compensation packages, and performance appraisal review policies (Jassawalla, 2010). By hiring the most qualified and experienced personnel possible from a global pool of applicants, organisations are better able to acquire knowledge in many different forms. Employee continuous learning and training programs under HRM will help companies with the knowledge sharing process, since workers must adapt to the constantly changing industry environment by increasing their knowledge and awareness of what is needed (Dussault, 2010: 24-26).

KM strategies usually focus on developing an intranet portal that can enhance information and knowledge sharing, communication, and interactive feedback between employees, vendors, and customers (Dougherty, 2009). The development of this intranet portal allows for innovative, problem-oriented ICT solutions. KM provides these knowledge creation solutions through a shared belief system arising from the social interaction of employees. Nonaka (2009) states that KM within companies offers the possibility of developing an interrelationship between tacit and explicit knowledge, wherein knowledge is transferred to the environment through products, patents, and people. Within KM theoretical frameworks, some organisations tend to focus more on individual knowledge sharing, yet others have a more group-oriented culture (Von Krogh, 2002: 12-14).

Takeuchi (2009) suggests that new knowledge can be integrated into organisations by combining information from both inside and outside the firm. Indeed, KM strategies focus on improving an organisation's capacity for gathering, sharing, storing, and distributing information in order to give it a competitive advantage in the global arena

(Berger, 1966). Ultimately, KM strategies can help companies to become more efficient and productive in their expansion worldwide, especially through the integration of an intranet portal for the purpose of upgrading interactive feedback between employees and companies (Tuomi, 2010; Skyrme, 2010: 114-118).

The most common model of KM enhances the interactivity between explicit and tacit knowledge on several different levels and among individuals, teams, organisations, and interorganisational domains (Ayas, 2009). This KM model explains how various organisational characteristics and structures influence the hierarchical management of these same organisations. Leonard-Barton (2009) correspondingly discusses a model of knowledge conversion processes that explain how collaboration in firms is essential to KM (Smith, 2009: 30-34).

In addition, Quintas (2010) documents the boundary crossing aspect of knowledge creation, whereby there are various types of obstacles facing team members. Several different KM disciplines allow these team members to traverse those aforementioned boundaries in order to achieve their specified objectives. KM helps companies to overcome these barriers so as to be able to improve interpersonal communication between team members, which is the key to developing a knowledge organisation. The greater the number of organisations that adopt KM strategies in the future will in turn aid the development of a global knowledge economy (Zion, 2002: 9-14).

2.4.6 Knowledge Applied to Organisations

The model depicted in Figure 2.2 shows how knowledge can be applied to organisations in order to coordinate the different elements of the external environment. These elements include partners, donors, development agencies, networks, and national and global factors of the macro environment and society. Collaboration between the organisational context, organisational knowledge, and interorganisational and intraorganisational relationships thus allows for the strategic alignment of the management processes, the networking of ICT functions, and knowledge creation and sharing using tools and activities that can be monitored and evaluated (Brue, 2002: 112-125).

Figure 2.2 The Application of Knowledge to Organisations

Source: Jefferson (2005)

2.4.7 Global KM Practices

Multinational corporations are well-known for their superior KM practices as a part of their business management approaches. In order to better understand how companies incorporate KM into their supply chain and managerial business techniques, it is important to complete a literature review of the basics of KM, identifying which aspects apply to corporations. Thus, Alavi (2001) clearly indicates how KM can be integrated into organisations as a system that is based on theoretical research and applied to real-world situations. Indeed, he also relates how differentiation from competitors and improved performance management can be achieved by companies through KM implementation.

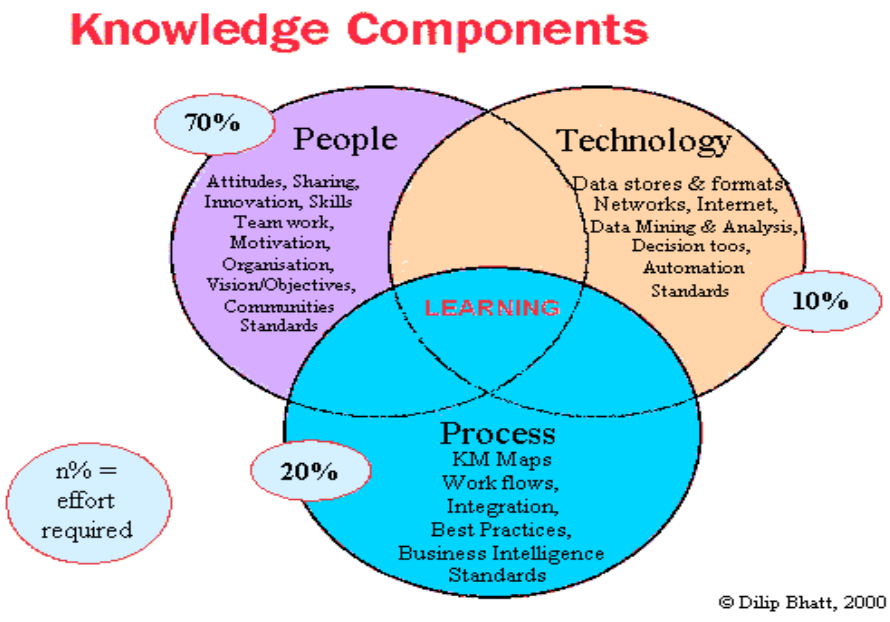
Alavi (2001) further states that as a form of differentiation from other companies, KM is, for many firms, the key to superior business management because it represents understanding gained through research or experience of a company, thereby increasing communication with clients, suppliers, distributors, vendors, and within the company itself. He also reveals how business management firms, which use KM, offer companies the capability to influence future action. These business management firms similarly present employees in the company with the capacity to use information, which causes them to develop learning and experience from interpreting

the data and applying it to the decision making process (Alavi, 2001: 110-124; Fahey, 2010: 144-159).

2.5 THE COMPONENTS OF KM: CASE STUDIES

According to Bhatt (2008) and as is depicted in Figure 2.3, the various components of KM include people, technology, and process. The largest component within this grouping is that of people's attitudes, which is considered to be about 70% of the KM process, and it is comprised of sharing, innovation, skills, teamwork, motivation, organisation, vision, objectives, communities, and standards. The second component is technology, in the form of data stores and formats, networks, the Internet, data mining and analysis, automation, and standards. Technology's role in the entire KM process is perceived to be about 10%. In comparison, process is considered to have a 20% share in KM, with regard to KM maps, workflows, integration, best practices, business intelligence, and standards (Grant, 2010: 136-148).

Figure: 2.3 The Components of Knowledge



Source: Bhatt (2000).

Alavi (2001) describes how these processes should be implemented into managerial strategies, since knowledge itself is a process of simultaneously knowing and acting that applies expertise to employee competencies. KM also allows managers to access information that must be managed effectively to create easy accessibility and provide

the ICT capabilities needed to retrieve it. In addition, business managers who can supply this type of management service, integrating it successfully into corporations, will have gained a competitive advantage over others within the industry that have not benefitted from this particular approach (Alavi, 2001: 111-124).

The case study of KM made by Travis (2002) demonstrates that it has a well-structured value chain, which is effectively the lifeline of services and products that are used to convert materials into goods for distribution to customers. KM helps with the organisation of companies' Supply Chain Management (SCM), which controls all activities and participants along the supply chain, including suppliers, internal logistics, distribution to customers, ordering, billing, and monitoring. SCM controls the value-added supply chain and allows for strategic management business policies to be implemented through ICT in order to increase productivity, efficiency, and customer service. By using Point of Sale (POS) data, companies found that automated processing created faster, more efficient, and better marketed products and services (Travis, 2002, 10-22).

KM also allows companies to achieve absolute cost advantages, which help them to overtake their competitors through the setting of fixed costs that consumers can depend on to be competitive. Absolute cost advantages are the result of excellent management and production operations by companies with years of experience, technological engineering, superior quality materials, better labour and equipment, and corporate strategic managerial abilities. Thus, the KM abilities of companies help prevent new entrants to the fast food industry, for example, due to the monopoly on prices set by companies, which will remain after they enter the new market (Travis, 2002: 12-15).

Schneble's (2009) study offers an informational case study on the company Cisco, which has recently implemented its own KM portal and has been very successful at upgrading its levels of productivity and communication. Schneble (2009) further illustrates that the important task facing companies is to overcome the knowledge barriers which prevent them from upgrading their employees' performance and their productivity. Indeed, he indicates that the role of companies is to overcome the knowledge barriers of SCM implementation through collaboration and cooperation, thereby improving the KM supply chain with the use of communication portals.

Correspondingly, the objective of KM is to provide comprehensive solutions with soft systems methodology (SSM), bestowing immediate access to essential resources as a source of reference for internal employees and managers. Schneble (2009) also points to some of the major benefits that would be provided by KM solutions such as minimising time to proficiency, which would orient new SSM within three months of the hire date to give the proper data to the organisation, their vendors, and their customers, and which would enable an increase in productivity (Hingston, 2010: 187-196).

Furthermore, Schneble (2009) proffers other solutions that include maximising employee performance and the sharing of knowledge assets, which would then allow information that was specific to SSM to be accessible through the organisation's portal website. These knowledge assets include the past records of the best practices of other organisations' implementations, potential customer situations, goal setting, and advice on when and how to engage other departments in the process. As a result of providing continuous learning and communication within the geographical work environment, employees are better able to develop a means of communication for sharing information and experience with other team members, creating a portal of knowledge as a KM solution (Schneble, 2002: 1-7).

Schneble (2009) also describes how to implement KM solutions, whereby business managers must control existing knowledge and create new knowledge that will increase their market position within the industry. Some managers attempt to distinguish their services, using methods that maximise management and employee performance by getting them to share knowledge assets. This would allow information specific to SCM to be accessible through the organisation's internal means of communication or via its website.

On a similar level, Gopal and Gagnon (2009) document some of the most useful recommendations for business managers to improve their overall efficiency and knowledge of the industry by using KM solutions. Another KM solution that Gopal and Gagnon suggest involves a KM portal, where KM encourages supply chain managers within industries to participate in the knowledge giving process by creating portals of knowledge that will help other employees learn and improve their skills and competencies. Indeed, Gopal and Gagnon (2009) detail how employees will have

access to this portal via usernames and passwords that will only allow the internal information on the database to be reviewed. The website will have the capability to access the Internet and it will also display connections to extranets and intranets that are only accessible by industry employees for security reasons.

Gopal and Gagnon (2009) further describe how future business managers must have internal software programs and applications with different levels of security clearance that are accessible by a similar range of employees, so as to provide valuable data within the company. Gopal and Gagnon (2009) demonstrate how a KM portal depends on a knowledge framework that is based on a dynamic and continuous set of processes in individuals, groups, and physical structures, which (as processes of KM) involve knowledge creation, knowledge storage retrieval, knowledge transfer, and knowledge application (Gopal and Gagnon, 2009: 5-13).

Gold (2002) states that other KM solutions include upgrading technology in the MIS and that ICT systems will remove barriers to internal communication, which occur between various divisions of an organisation. Gold (2001: 187-195) also explains how technology is the key to an organisation's total infrastructure, which by extension supports the different kinds of knowledge and communication that employees need to be able to access in order to perform their jobs properly.

In addition, Gold (2002) details how effective business management trains managers to provide continuous learning and communication within the work environment, so that employees are better able to develop a source of communication for the purpose of sharing information and experience with other team members. Gold (2002: 187-195) finally asserts that advising clients to use these ICT systems and techniques will enable them to have a competitive edge over other firms.

Hingston (2010) explains how one KM solution involves American multinational corporations utilising their KM portals to give employees the ability to enter and edit safety notices that are posted on their online bulletin board. These corporations are protected against breaches of confidentiality or legal problems by using keywords as safeguards to this portal of knowledge. In addition, Hingston (2010: 1-16) claims that business managers need to recruit other people with expertise in skills, organisational change, and KM, so that their SCM implementation can be used properly.

Hingston (2010) further describes how business managers can separate themselves from other firms with KM used in collaboration with SCM, allowing for a greater variation of products and supply and distribution chains. Indeed, he emphasises that there are many supply chain decision areas that lack KM, but these can be incorporated into a company's daily business practices in order to improve the overall operational success. Hingston (2010) also explains that some of these processes include the following: production and manufacturing; geographical location; transportation via airplanes or cargo ships; inventory and storage; distribution through the value-added supply chain; and, supply itself. Hingston (2010) finally suggests that KM is lacking in the industry when the following areas are labeled as insufficient in corporations: management support; improved performance (such as enhanced safety awareness); added benefits; and, learning about the geographical challenges that affect the ICT infrastructure. Managers who focus on solving these types of organisational problems, however, often gain a competitive advantage over others within the industry (Hingston, 2010: 1-16).

Nolan (2010) stresses that the major objective of competitive business management is to satisfy clients' needs with cost-effective technological solutions for their professional and organisational problems. He thus explores how many business management firms diversify their services to provide more alternative approaches for their customers, thereby allowing for expansion and the incorporation of systems thinking with different ICT systems. Furthermore, Nolan (2010) also describes how a business management firm can differentiate itself and achieve a competitive advantage by outsourcing its training, products, and services in order to streamline overhead expenses. Nolan (2010: 53-62) similarly explains how the use of various KM and ICT methods can achieve greater managerial and organisational efficiency for clients.

Fahey (2001) explains how various business management approaches can be improved with the integration of KM practices and portals of information. Indeed, he states that some of the different organisational approaches that many business management companies have recently incorporated into their ICT solutions include: KM used in combination with SCM, business process reengineering or management (BPR BPM), and with enterprise resource planning systems (ERP).

Fahey (2001) further describes how some firms may rely on a combination of management approaches and various systems in order to compete within extremely competitive environments. Other companies may use KM strategies to ensure organisational improvement over time. Alternatively, some firms may use pricing strategies that will help them adapt to changes in the economy and upgrade their current pricing abilities. In addition, Fahey (2001: 22-39) reveals how companies can gain a competitive edge over rival firms through the use of a generic, functional business strategy, which helps them to research and identify the necessary decision making processes that they will need to employ, so as to adjust to economic recessions, inflation, and other financial changes in the market that may otherwise affect their organisation.

Gammelgaard (2001) details how organisations overcome the knowledge barriers to SCM implementation, so that business managers within the industry can increase their educational requirements by improving their employees' skills and competencies. This includes the context-independent knowledge and experience-based context-dependent knowledge. Correspondingly, Gammelgaard emphasises that employee skills are the tools that are needed to understand (logistically speaking) the working process. By increasing the level of discipline that employees have, managers can upgrade their level of competence within the organisation. On a final note, Gammelgaard (2001: 93-108) describes how experience stems from time spent on the job, learning and improving worker competencies.

2.6 PORTER'S NATIONAL DIAMOND THEORY

With regard to KM when creating a KBE, competitive advantage is an important factor that helps to strategise sustainable growth to the economy. Porter's National Diamond Theory promotes innovation as the most effective method of gaining a competitive advantage in foreign industries, both on a regional and on a global level.

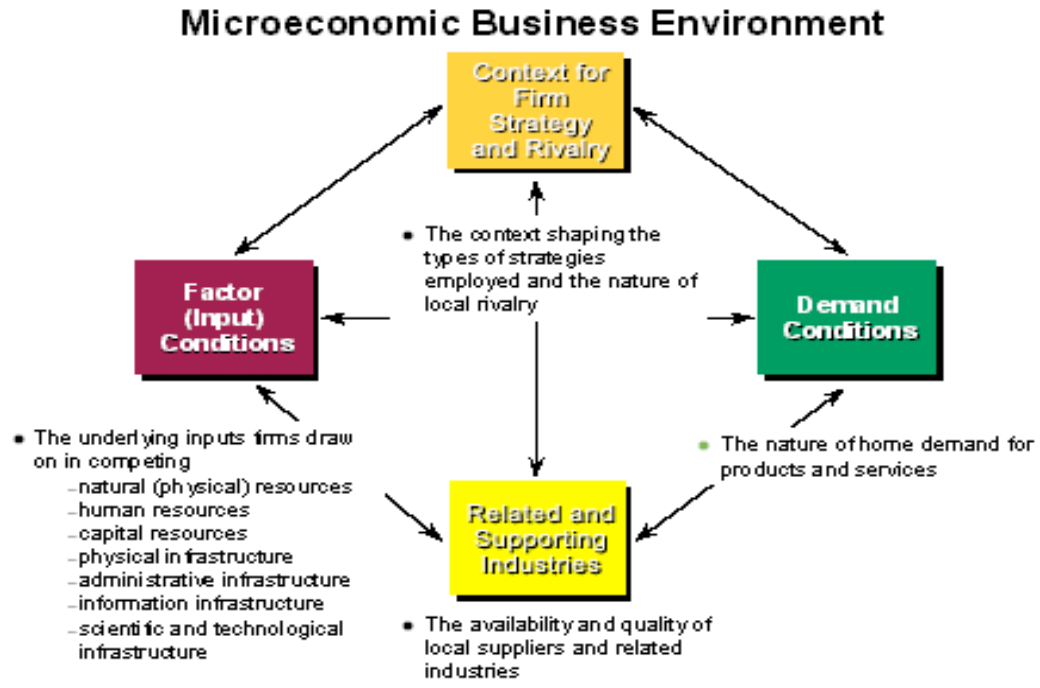
Porter has several theories on strategy, but it is the National Diamond Theory that illustrates how an edge can be obtained over market competitors through the use of investment resources, innovative new products, and employees with advanced skills. Support for Porter's theory relies on the capital opportunities that may come from foreign investments. It should, indeed, be noted that Porter created this model to assist

managers in analysing the competitive forces that put pressure on a corporation from several different angles (Rugman, 2011: 20-28).

Porter's model, as depicted in Figure 2.4, identifies five basic environmental elements that can be applied to any country to evaluate its potential as a nation worth entering with new or existing products and services. Companies that try to determine whether they should consider entering different nations with their products or services can determine how well they will compare to the four factors of the local business environment. A proper appraisal of the host nation environment, compared to the home country, will allow companies to predict how well their products and services will be accepted by the local population. Evaluating the local supply and demand of similar or related products, combined with the conduction of a competitor analysis, could also be helpful when placing the Porter National Diamond Theory into the appropriate context (Hill and Jones, 2008: 165-177).

Figure 2.4 shows the original version of Porter's National Diamond Theory (prior to its update); it is used to appraise the successof a product or service launch in new countries by evaluating the microeconomic business environment.

Figure 2.4: Porter's National Diamond Theory Chart



Source: Porter (1986)

The second factor relates to the demand conditions involved in the home country and how they can be reproduced in the host nation. The third element refers to the factor or input conditions of the host country. This aspect helps to provide information on the underlying inputs that the company relies upon when competing in the market, such as: natural, human, and capital resources; physical, administrative, and information infrastructure; and, scientific or technological infrastructure. Finally, the last factor refers to the related and supporting industries, and to the availability or quality of local suppliers (Feser, 2002: 51-59; Findlay, 2000: 6-9).

Porter believes that one of the main determinants behind the attainment of a national competitive edge over rivals in the market is process and product innovation, rather than natural resources or cheap manual labour. According to Bennett (2001), companies must enhance their market positioning by turning their weaknesses into strengths, so as to increase their chances for industry survival. Contemporary society, dominated by interrelated political alliances and conflicts, governmental regulations, and other legislative restrictions, has prompted Porter to add a fifth factor to his model; namely, that of government policies.

Corporations that wish to achieve complete global competitiveness can then apply these five factors defined by Porter's Diamond Theory (Hill and Jones, 2011: 165-167; Porter, 2001: 72-83):

(i) Factor endowments – a country's position in relation to production, such as its possession of the necessary infrastructure or skilled labour required to compete in a particular industry;

(ii) Demand conditions – the nature of the home demand for the market's product or service;

(iii) Relating and supporting industries – the absence or presence of supplier industries and related markets in a country that is globally competitive;

(iv) Firm strategy, structure, and rivalry – the conditions of a country that relate to how firms are organised, formed, and managed with regard to domestic rivalry;

(v) Government policies – these are the regulations for business competition, including state intervention in industry, regional development, and vocational training; they must be followed by companies during the pursuit of local and global trade.

Porter's National Diamond Theory proffers five points of competitive strategy, which are considered to be the principal sources of competitive advantage of business environment, and together they make a country internationally competitive

In the model, factor conditions refer to the availability of specialized, efficient and good quality input (in this case knowledge) to the companies in a country. These factors can be in the form of human resources (such as the availability of qualified individuals, cost of labour, commitment, *etc*.), available and accessible natural resources and importantly infrastructure (such as administrative, information, scientific and technological infrastructure). Thus, development of a particular industry in country is determined by the availability of set of such factor conditions.

As regards to the demand conditions, such conditions, in a causal manner, determine and are determined by the particular factor conditions. In addition, demand conditions determine the nature and speed of innovation and product development. According to Porter (1986) demand conditions are articulated by the following characteristics: high customer expectations for products; local customer needs; and unusual local demand in specialised segments that can be served globally.

As for the third micro-economic foundation in the Porter model, namely related and support industries, they create opportunity spaces for the main local industry or industries to be more competitive through the provision of cost effective and innovative inputs. In particular, the suppliers are strong global competitors due to product and efficiency, the role of the related and support industries are strengthened in terms of creating further opportunities for the competitive firms and sectors.

As for the last factor, namely, firm strategy, structure and rivalry, it includes the local context, business and social environment, and rules that encourage open market and local competition. This is expected to create an efficient and effective environment helping to develop competitive edge to the local and national firms. Such as attracting FDI is very much related to the conditions of the market in an economy.

Since the contemporary societies are dominated by interrelated political alliances and conflicts, governmental regulations, and other legislative restrictions, this has prompted Porter to add a fifth factor to his model; namely, that of government policies, which identifies how governments have to conform to global benchmarked standards in order to be able to compete in the global markets (Sledge, 2009: 19-24). Thus, governments are given the tasks to provide effective and efficient policies, regulations and infrastructure to help their industries to remain sustainably competitive.

It should be noted that while Porter's model focuses on the firm strategy, it also aids the explanation of the rivalry that exists between countries which sell similar products and services and that are already present in, or may consider entering, one of these emerging nations. Therefore, as it is in this section, it can be applied to country cases as well in the face of international competition; as countries aim at sustaining their competitive edge to generate new wealth.

In overall, each of the micro foundation in Porter's Model can be related to knowledge and hence KBE. For example, factor conditions can be enhanced with development of knowledge and innovation; demand conditions can be enhanced again through knowledge development; firms can remain competitive through innovation and commoditizing knowledge; and related industries can remain providing support through innovation and knowledge. In addition, government's role can be enhanced through efficient implementation of knowledge. Thus, for KBE, as Porter's Model suggests, generation, storage, commoditisation and use of knowledge is essential.

2.7 CONCLUSION

The creation and use of knowledge as an input in the production process defines the nature of a KBE. Indeed, knowledge constitutes the operational element within such economies; those economies that successfully produce knowledge will gain a competitive edge in terms of wealth creation.

As is defined by Arvanitidis and Petrakos (2011: 17), the pillars of a KBE can be summarised by the following features:

(i) Human capital;

(ii) Ability to innovate;

(iii) Access to information;

(iv) Economic performance.

To attain the status of a KBE, KM is an essential formative process, since knowledge has become the social capital for people to trade and use as a commodity in order to increase their employment and business opportunities. KM is therefore important for economic development and individual empowerment, as a KBE must rely on its own capabilities to survive in the global marketplace; for through the act of knowledge creation, a KBE gains a competitive edge that allows it to contribute to wealth creation, both for its society and other purposes.

A critique of the literature related to KM reveals that despite the presence of considerable academic research on the subject, it is still a relatively new topic that has only been applied in organisations via an abstract form. According to Bayer (2010), the concept of KM is developed from rational principles to increase efficiency and productivity by upgrading HRM techniques and through the expansion of ICT capabilities. There are, however, several different concepts related to KM that can be immediately useful to any organisation, such as continuous learning programs and intranet portals designed to increase employee communication and feedback (Sandow, 2009; Maier, 2010: 56-59).

Despite the benefits of KM, there are some criticisms directed at the difficulty of its proper implementation (Hadrich, 2007), since many organisations never adopt the intranet portal design in the appropriate manner so as to provide enough learning programs for employees (Peinl, 2011). The concept of KM also encompasses a wide range of different elements, which makes it hard for some companies to reorganise their entire corporate strategies around this idea in practice (Amende, 2009); skeptics believed that KM would never become a notion, which organisations would take seriously. KM strategies, including knowledge management systems (KMS) and knowledge management officers (KMOs), are, however, rapidly becoming essential to the survival of multinational corporations. Critics such as Remus (2011) have now realised that the simple underlying goals of increasing the efficiencies and

productivity of knowledge workers comprise the fundamental framework for integrated KM strategies.

KM initiatives, including the implementation of KM intranet portals that apply KM strategies, which link governmental agencies, are now supported by a number of governments around the world (Flother, 2010). Some critics feel that more intensive KM strategies, such as those that involve collaboration with ICT methods, represent the future guidelines that most organisations wanting to expand overseas will have to incorporate in order to compete with others in their particular industry. Critics still, however, believe that because it often takes years for proper KM implementation to become a part of an organisation's corporate structure, the benefits may not be worth or outweigh the initial ICT and HRM investment (Grant, 2010: 109-113).

Many experts thus believe that creating a global KM system is the key to reducing poverty, unemployment, homelessness, starvation, and war. Indeed, critics such as Sametinger (2010) feel that by empowering everyone with knowledge, information, and education, the world would be a better place, with more peace and harmony. Organisations that are more knowledgeable will therefore be more able to adapt to changing environments and better able to compete in the global business world.

Employees made into knowledge workers will be more likely to adopt various skills that make it possible for the transfer of knowledge between departments. Most theorists believe that the future of KM lies in its transition into new phases such as knowledge process reengineering (KPR), where knowledge-intensive business policies and processes are redesigned to gain greater insight into them. According to Sametinger, who designed the KMS ICT architecture for peer-to-peer capabilities, KM initiatives will become basic procedures. Emerging nations will also integrate emergent technologies into joint projects with universities in order to educate and train future knowledge workers (Maier, 2010: 56-59).

KM ultimately provides essential capital for the future economic structure. Given that the traditional means of production are no longer effective or efficient when it comes to the creation of wealth, a structural change that embraces the concept of a knowledge economy is a necessary strategic action. Indeed, during the period following 1950, the financial system was considered to be the crucial area for

economic growth, yet the recent financial crisis is an important indication that this system can no longer produce wealth, as it is too unstable and vulnerable. It has therefore been replaced with a real economy linked to new methods of production, which solely revolve around the concept of knowledge. Those nations that can create and manage knowledge will remain at the forefront of global competition and will thus continue to proposer.

Chapter 3

KNOWLEDGE ECONOMY, ECONOMIC GROWTH AND DEVELOPMENT

3.1. INTRODUCTION

As the world continuously continues to changes and countries attempt to adapt to the dynamics of increasingly-competitive business industries, the development of a knowledge economy (or a KBE) is becoming an essential priority. Knowledge economies are created when countries focused on continual and innovative economic development involving through the integration of sophisticated technological advancements. A KBE concentrates on service-oriented businesses, rather than production-oriented businesses, in order to create new jobs. In addition, a KBE integrates Knowledge Management (KM) and new technologies, thereby creating various economic benefits, such as job creation. Thus, KBEs hold the key to the world's future progression because they are able to apply detailed information and proficient expertise to the solution of global problems, using KM acquired from numerous interrelated sources.

This chapter therefore aims to discuss the relationship between a KBE and economic growth and development, with the objective of identifying the positive role that knowledge can play in the future by generating wealth and development.

3.2 DEFINING A KNOWLEDGE BASED ECONOMY (KBE) AND THE NEXUS BETWEEN KBE AND ECONOMIC GROWTH

According to the most common definitions, a KBE is an economy where growth and development rely on the accessibility, quality, and quantity of globally available information, instead of the more traditional emphasis on the means of production. KBEs focus on gaining expertise in KM for knowledge creation, knowledge

acquisition, knowledge sharing, knowledge storing, and knowledge transfer in all industries. Countries wishing to become service-oriented industries that are able to compete in global business now integrate extensive KM strategies so as to move away from being production-oriented economies. KBEs use knowledge as the driving force for wealth creation and industry employment (Arthur, 2010: 1-8).

All business industries can now depend on KM for upgrading their overall strategies, processes, procedures, and policies. A KBE is based on the principle that human capital is the most valuable asset any company or society can have, and that continuous learning and the expansion of people's knowledge, combined with the integration of advanced new technologies, will always provide future possibilities for economic development. The KBE has services and productions based on business activities that are knowledge-intensive.

There have been numerous definitions of a KBE (Brinkley, 2012: 1-25; Hall, 2000: 1-9).

> The knowledge society is a larger concept than just an increased commitment to research and development. It covers every aspect of the contemporary economy, where knowledge is at the heart of the value added – from high tech manufacturing and ICT, through knowledge-intensive services, to the overtly creative industries such as media and architecture. (Kok Report, 2004)
>
> Economic success is increasingly based on the effective use of intangible assets such as knowledge, skills, and innovative potential as the key resources for competitive advantage. The term 'knowledge economy' is used to describe this emerging economic structure. (ESRC, 2005)

Figure 3.1 Various Perceptions of a Knowledge Economy

Views of Knowledge Economy	Knowledge as Asset	Knowledge as Capability	Knowledge as Relation
Theories of Knowledge Economy	New Growth Theory (Romer, 1986; Romer, 1990; Lucas, 1988)	Evolutionary Theory of Economic Change (Nelson and Winter, 1982)	Triple Helix Theory of Knowledge Economy (Etzkowitz and Leydesdorff, 2000; Leydesdorff, 2006)
	Technology Gap, Knowledge Gap Theory (Abramovitz, 1986; WB, 1999; Baskaran and Muchie, 2006)		National Innovation System Theory (Lundvall, 1992; Nelson, 1993)

Source: Garrett (2011)

Figure 3.1 explains how KBEs are beneficial assets that capitalise upon the overall capability of intellectual capital in relation to technological advancements and innovation. Some of the different academic perceptions of KBEs are interconnected in relation to the theories of a knowledge economy; these include the following (Machlup, 2011: 1-27):

(i) New Growth Theory by Romer (1990), or the idea of knowledge as an asset;

(ii) Technology Gap, Knowledge Gap Theory by Abramovitz (1986) and Baskaran (2006), or the notion of knowledge as an asset and capability;

(iii) Evolutionary Theory of Economic Change by Winter and Nelson (1982), or the notion of knowledge as capability;

(iv) National Innovation System Theory by Lundvall (1992), or again, the sense of knowledge as capability;

(v) Triple Helix Theory of Knowledge Economy by Leydesdorff (2006), or knowledge as relation.

There are, thus, a number of theories, which can be used to explore the relationship between 'knowledge' and 'KBE' and economic growth. The 'four pillars' of KBE as discussed in Chapter 2 and as mentioned in this Chapter provides main variables in conceptualising the relationship between KBE and economic growth through 'knowledge generation'. Each of the above mentioned theories takes the relationship between economic growth and knowledge through a particular dimensions or through each or the combination of the 'four pillars'.

The new growth theory as articulated through endogenous growth (Romer, 1990; Jones, 2002) considers 'knowledge' as an asset in addition to capital and labour. In other words, as Lucas (1988; cited by Poorfaraj *et al*., 2011: 21) states, in endogenous growth model, knowledge related factors, such as "increasing returns to scale, innovation, openness to trade, international research and development (R&D), and human capital formation are considered key factors in explaining the growth process". While the conventional 'production functions' only considers labour, capital, materials and energy, in this relationship, knowledge and technology are considered

as exogenous variables having indirect impact on production (OECD, 1996: 11). However, endonegous growth theories treat such variables as directly impacting the production function. Thus, knowledge and other mentioned variables are considered part of the long-term growth function (Romer, 1990).

In the new growth models, hence, 'knowledge' enters the production function as an input similar to capital and labour. This is because of the fact that knowledge leads to innovation (as one of the pillars of a KBE) and hence technological change. This happens due to the fact that "investments in knowledge can increase the productive capacity of the other factors of production as well as transform them into new products and processes. And since these knowledge investments are characterised by increasing (rather than decreasing) returns, they are the key to long-term economic growth" (OECD, 1996: 11). This, hence, implies that knowledge enhances and creates efficiency in the production function alongside labour and capital leading to economic growth. In other words, due to the outcomes of knowledge, namely technology, the production function moves into a more efficient frontier leading to economic growth.

Economic growth impact related technologies through knowledge may directly be related to production and distribution, or simply supporting technologies such as ICT, which helps to make things easier. While the production impact of knowledge relates to 'endogenous growth' theories, the supporting technologies related impact can be explained through 'technology gap or knowledge gap theory' developed by Abramovitz (1986) and Baskaran (2006). As they assume knowledge as an asset and capability; thus, accordingly knowledge enhances the capabilities in furthering the production function to move to an efficient frontier, which is expected to lead to economic growth. In other words, "technological change raises the relative marginal productivity of capital through education and training of the labour force, investments in research and development and the creation of new managerial structures and work organization" (OECD, 1996: 11).

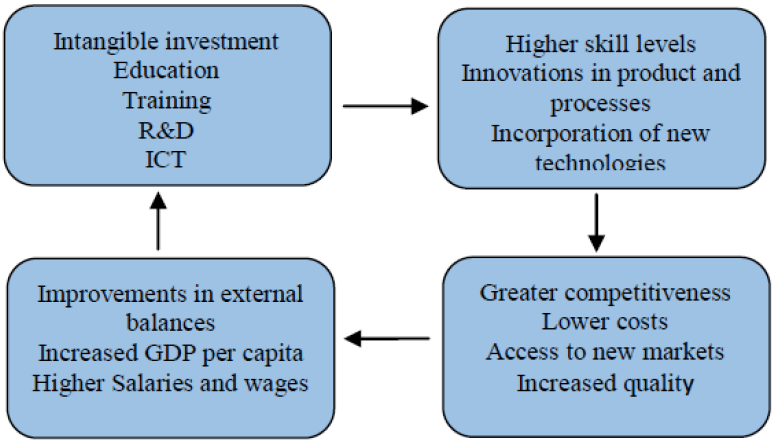
Capability enhancing nature of knowledge also relates to innovation of new production and distribution systems as well as mechanisms. Such economic growth impact of knowledge within KBE is explored and theoretised also by Winter and Nelson (1982) through 'evolutionary theory of economic change', according to which economic growth is considered through evolution and change in economic structures

and technologies due to knowledge development. Lundvall's (1992) 'national innovation system theory' assumes the economic growth impact of knowledge through enhancing capabilities as well.

Leydesdorff (2006) in his 'triple Helix theory of knowledge economy' assumes knowledge as 'relational' in the sense of creating a connection between various stakeholders in the economy for an efficient production, leading to economic growth. Thus, development of knowledge through new technologies, novel production and delivery mechanisms and technologies in various stakeholders spheres results into establishing more efficient and effective relational models. This synergy through knowledge generation results in economic growth.

In sum, as can be seen in Figure 3.1, knowledge contributes to economic growth through being an asset but also being a variable in facilitating the decision making process whereby determining the growth rate of an economy. As part of KBE, thus, "Technological progress makes it possible to extract greater value from limited resources and sustain the economic growth over the long-term" (Poorfaraj *et al*., 2011: 21). Thus, "investments in education, invention, and related knowledge enhancing activities are seen to be the key factors to overcome the impact of the diminishing returns" (Poorfaraj et al., 2011: 21).

Figure 3.2: KBE and Economic Growth



Source: World Bank Institute (2007) (taken from Poorfaraj *et al.,* 2011: 22)

3.3. THE NEED FOR A KNOWLEDGE ECONOMY

The world needs countries to develop into KBEs so that the post-industrial society will incorporate knowledge as the essential aspect of its economic growth. Knowledge creation contributes to the development of intellectual and social capital, and it also assists in the integration of innovation and technological advancement. KBEs inspire progress, growth, and development through the dissemination of knowledge across all levels of society. People who would, perhaps, not have had access to knowledge are then able to develop their individual skills and talents due to the prevalence of knowledge acquisition and knowledge sharing throughout the KBE (Ozuna, 2012: 1-16).

It should be noted that KBEs produce knowledge as their main service, yet these same economies use knowledge as an innovative tool to get what they want. Some researchers, such as Crawford (2009), state that KBEs must now list their knowledge resources (including human and social capital) as knowledge acquisitions crucial to their other corporate economic resources. KBEs are dependent on major support from the government to both private and public sectors for research and development into technological investment and innovation. Analysts of the KBE suggest that KM within global industries needs to be adapted to include knowledge-related policies, which governments must acknowledge in their public policy decision making. Indeed, as the world continues to change due to political, economic, and social problems, new technologies and innovations will be the key to resolving global issues. KM strategies, that involve knowledge sharing using international global mass media venues such as the Internet and other online resources, provide the fastest and most efficient methods of collaborating knowledge from knowledge workers in KBEs all over the world (Machlup, 2011: 1-16; Drucker, 1993: 174-198).

3.4. THE FEATURES OF A KBE

This section aims to describe the features of a KBE in an attempt to identify which societies embody and illustrate those particular determining traits.

As discussed in Chapter 2, the main characteristics of a KBE are as follows (Asgeirsdottir, 2006: 18):

(i) innovation;

(ii) new technologies, including ICT and R&D;

(iii) human capital, including education, training and skill development;

(iv) enterprise dynamics or efficient business environment.

As discussed in Chapter 2, there are other macro and micro conditions for a KBE. For example, for the OECD, the main features of a KBE are major investments by the government in the public sector and by multinational corporations in the private sector, research and development, IT software, and higher education throughout various industries as future driving forces of the economy. The OECD conducted extensive global research into the development of appropriate measurement systems for monitoring and determining the ongoing progress of KBEs through the use of national investment into these areas as a percentage of the annual Gross Domestic Product (GDP). The United States of America (USA) and the United Kingdom (UK) are considered to be the most advanced KBEs, yet India, China, Korea, and Japan are also rapidly adopting policy reforms and acquiring new technological processes in order to become the world's future, and foremost, KBEs. Results from this research further show that KBEs have three main levels (Lipsey, 2010: 49-62; Bell, 2010: 162-183):

(i) High knowledge investment economies, which invest over 6% of GDP and include Asia and North America;

(ii) Middle knowledge investment economies, which invest over 4% of GDP and include Australia and Northern Europe;

(iii) Low investment economies, which invest over 2% of GDP and include Southern Europe.

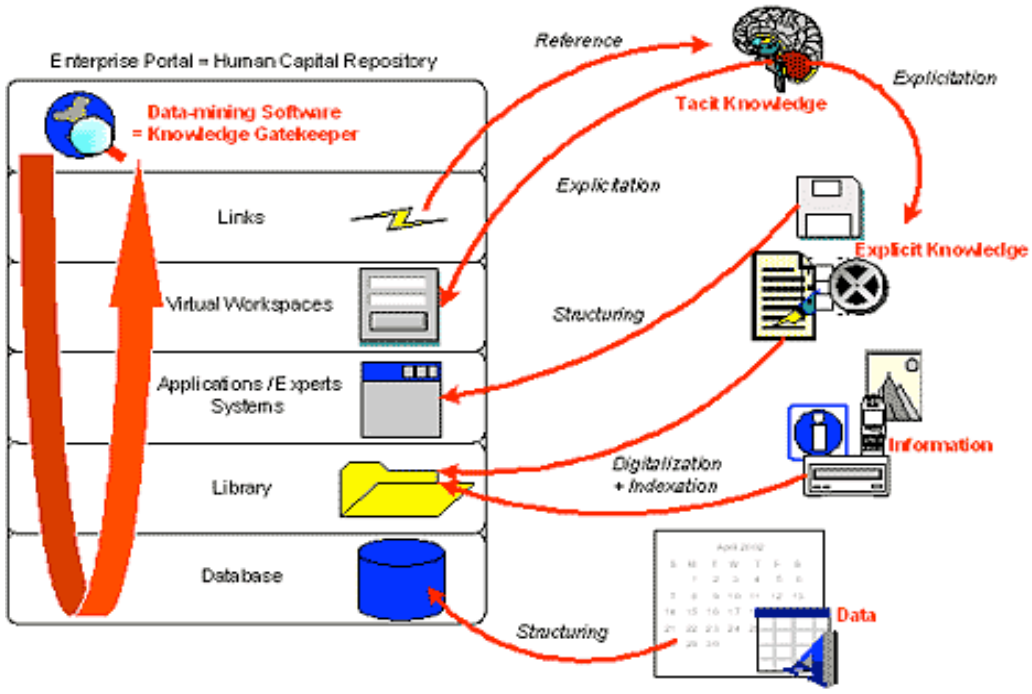
3.5. THE WORKINGS OF A KBE

KBEs aim to implement diversification throughout global societies with governance and educational institutions that provide both non-economic and economic benefits in order to develop human capital by advancing the abilities and skills of the people.

Countries with such KBEs are now taking advantage of cyber infrastructures and crossing the global boundaries that previously restricted them from open free trade and strategic alliance partnerships. Scientists are collaborating with each other on a global scale through Internet discussion forums and online information commons to share knowledge for the solution, and future, of international problems (Adams, 2007: 9-51; Kahin, 2006: 430-468).

KBEs are based on sophisticated technological systems and innovative ICT software applications, coordinating information so that it is easily accessible for people to apply it within the real world. Figure 3.3 shows the ICT structure of the KBE, where the enterprise portal is the human capital repository of knowledge that people have acquired and can apply in the business world. Data mining software is the knowledge gatekeeper of the KBE, using centralised databases full of tacit and explicit knowledge for references and structuring. Virtual workspaces and online links are coordinated with applications and expert ICT systems that act as digital bridges between nations to develop the library database; this database subsequently employs digitalisation indexation to categorise the information and data that forms the basis of a global knowledge economy (Afele, 2003: 1-34).

Figure 3.3: The ICT Structure of a KBE



Source: Jacobson (2007)

The World Bank calculates the Knowledge Economy Index (KEI) according to the four pillars of the KBE's framework. These pillars include (Adams, 2007: 9-51; Cooke, 2009: 1-8):

(i) An incentives system – the development of an institutional and economic system that offers incentives for both new and existing knowledge to promote entrepreneurship;

(ii) Knowledge workers – the establishment of training programs and higher knowledge opportunities to create a skilled and educated population so as to support knowledge acquisition, sharing, creation, and storage;

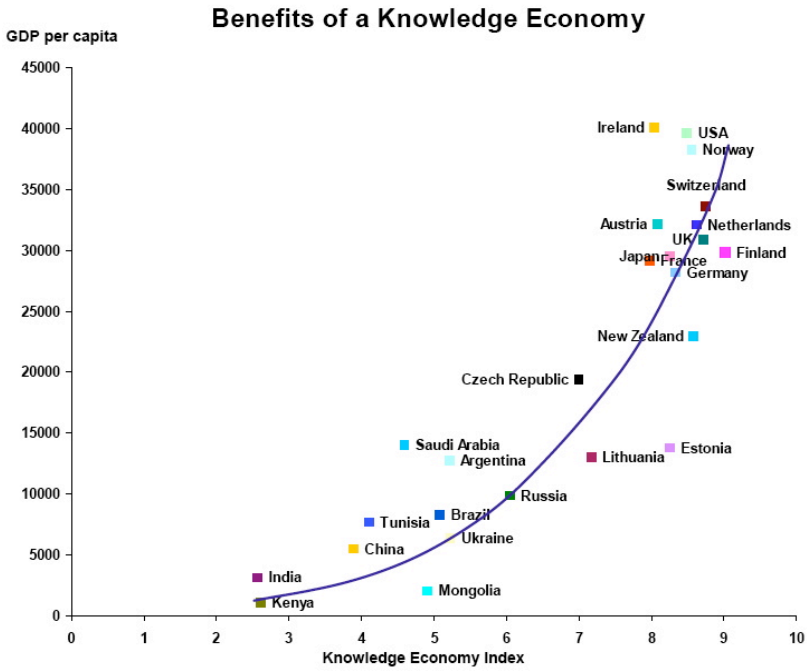
(iii) An innovation system – an efficient system of innovation and technology that includes universities, research centres, companies, consultants, and other related organisations for the purpose of accessing global knowledge in order to integrate it, and thereby adapt it, for local requirements;

(iv) An information distribution system – the development of an Information and Communication Technology (ICT) system, facilitating knowledge creation and processing, and the dissemination of information.

KBEs stimulate growth and development that generate ongoing money and added value for countries. These particular economies are also important for countries whose GDP is mainly generated by oil wealth, since they will help them through the future thirty-year transition period. During this period, these countries will have to focus on the development of the service sector, as manufacturing industries and oil production become obsolete with the discovery and usage of cleaner alternative energies. Nations such as those in the GCC which are mainly dependent on oil revenues must begin preparing for this future, where alternative power sources including solar, wind, nuclear, and hydrogen, will replace oil as a worldwide fuel. Without the global oil trade and with limited cheap labour or manufacturing capabilities, countries akin to Qatar will decline rapidly if they do not become KBEs focused on service industry expansion, or, more specifically, an economy prioritising investment in future research and development, innovation, ICT, computerisation, and new technologies (Dolfsma, 2011: 1-26; Porter, 2009: 12-27).

Figure 3.4 reveals how the development of a KBE benefits the entire population, since it increases the GDP and GDP *per capita* by providing more opportunities for higher education, jobs, new technologies for increased convenience, and online ICT services. The chart further shows that the highest GDP *per capita* countries (and KBEs) are the USA, Ireland, and Norway at $40,000 per person annually, whereas Switzerland is at $35,000 and the UK, Austria, and the Netherlands are at aapproximately $33,000. In comparison, Japan, France, Finland, and Germany are at $30,000. According to the ETH Strategy Report '*Knowledge is the Main Engine of Economic Growth'*, there is a strong association between the KEI and a country's GDP *per capita* earnings (Sorlin, 2012: 82-103).

Figure 3.4: The Benefits of KBEs



Source: ETH Strategy Report (2011)

3.6. CHALLENGES FOR KBEs

There are many benefits of a KBE, which include helping people, companies, and governments to share knowledge in a variety of methods with the rest of the world. KBEs not only allow societies to share their own knowledge with other countries, but also to learn from them as well. These types of mutual benefits help to make the

world a safer, more knowledgeable place with new innovative ways for resolving old problems. There are, however, many challenges involved in the creation of KBEs (Ajmal, 2009: 1-17):

(i) Although the benefits of knowledge transfer have long been recognised in project-based organisations, the effectiveness of this knowledge transfer varies considerably among these organisations;

(ii) The failure of many knowledge transfer systems is often as a result of cultural factors, rather than technological oversights;

(iii) Knowledge can be categorised into tacit knowledge and explicit knowledge;

(iv) Members must engage in informal and unstructured communication, so as to facilitate comprehension, discussion, and negotiation, which are central factors within the knowledge transfer process;

(v) Project-based organisations systematically identify and transfer valuable knowledge from current projects to subsequent projects

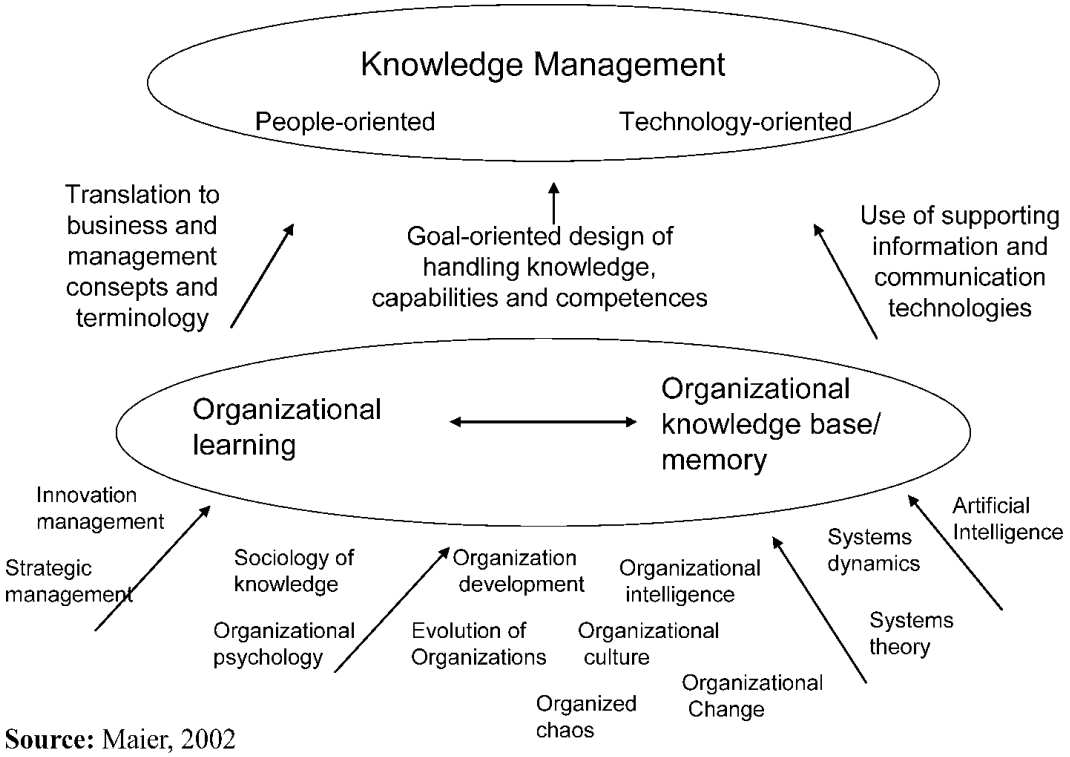
3.6.1. The Challenges Facing Knowledge Transfer

A critical analysis of the challenges facing knowledge transfer shows that there is sufficient evidence for KM to be one of the most effective methods for upgrading company processes, policies, and procedures. KM also improves communication, feedback, and organisational cultures, yet some companies have problems with unifying their organisational cultures because the workers have too many individual, social, and cultural differences. Countries learning how to integrate KM properly will be able to provide a valuable insight into how people can improve their knowledge transfer process. There should, however, be more information about what strategies will help firms overcome knowledge transfer barriers. Recommendations also needed for improving KM and transfer within firms by incorporating social events that will help employees get to know each other better and thus learn from each other in a social setting.

There should similarly be suggestions about developing project teams and coaching them to be better at sharing knowledge through workshops or through personal

journals that can be presented at group meetings. Applying KM theoretical frameworks to genuine scenarios helps governments and companies understand the importance of knowledge transfer as a practical and realistic approach for upgrading team projects, communication, knowledge sharing, and KM. Indeed, many large companies are now integrating KM and transfer into their departments to improve their communication between different offices, divisions, and employees. Sharing knowledge is now an essential element of numerous new tactical strategies for expansion, growth, and development in global corporations (Ajmal, 2009: 1-17).

Figure 3.5: The KM Model for KBEs



Source: Maier, 2002

The KM Model, illustrated by Figure 3.5, demonstrates how KBEs have two different directives:

(i) A people-oriented focus comprised of:

(a) Organisational learning;

(b) Translation of business and management concepts and terminology;

(c) Innovation management;

(d) Strategic management;

(e) Organisational psychology and the sociology of knowledge;
(f) Organisational development;
(g) Evolution of organisations;

(ii) A technology-oriented focus comprised of:
(a) Organisational knowledge base/memory;
(b) Use of supporting Information and Communication Technologies (ICTs);
(c) Artificial intelligence;
(d) Systems theory and system dynamics;
(e) Organisational intelligence;
(f) Organisational culture;
(g) Organised chaos;
(h) Organisational change.

The roles assigned to globally connected governments in developing KBEs are as follows (Tsoukas, 2009: 158-173; Westlund, 2008: 1-17):

(i) The integration of KM strategies for acquiring, creating, sharing, storing, and transferring knowledge, so as to develop a KBE;

(ii) The acquisition (and subsequent sharing with the local society) of knowledge, skills, experience, and expertise from all other countries in the form of human capital, intellectual property, research and development, corporations, products, and services;

(iii) The development of national knowledge resources such as local research and development centers, best practice and benchmarking centres, ICT training programs, higher education institutions, and other innovative knowledge sharing facilities.

3.7. KM IN A DEVELOPING KBE

The significance of KM in developing KBEs is that it allows governments, companies, and people to facilitate the organisation and management of all information related to the changes that they are undergoing using new technologies. KM is the most essential element for the creation of KBEs, since they are only of

value if the knowledge that they have acquired is easily accessible and available to be shared. KM's function in the development of KBEs is to coordinate centralised ICT knowledge databases as internal storage facilities for the collaboration knowledge with the rest of the world. KM enables knowledge access and sharing through a government's ICT infrastructure, thereby instigating economic development and training knowledge workers to be able to ameliorate their quality of life (Romer, 2007: 62-89; Rooney, 2005: 245-271).

3.7.1. KM and Knowledge Transfer

KM and knowledge transfer are crucial to both public and private organisations and they can be examined from an organisational culture perspective. Project-Based Organisations (PBOs) are complex, unique, and often uncertain because they contain high levels of KM. The employees of these PBOs are able to transfer knowledge between themselves, thus sharing that knowledge for the benefit of the entire organisation. Many PBO employees have the capability to manage their knowledge without constraining it, unlike those employees at other firms. Correspondingly, many PBOs also possess excellent skills in knowledge creation and sharing, combined with a perceptive understanding of what is entailed by KM (Ajmal, 2009: 1-17).

Project teams have different people with varying degrees of knowledge and diverse skills; it is therefore difficult for these people to work together for longer than a short period. The key to an effective PBO is to acquire, share, and transfer knowledge continuously throughout the entire organisation, from one project to the next without losing it. Knowledge transfer is essential to developing a cohesive organisational culture of people who can work in a unified manner (Alavi, 2006; Bray, 2007). This paper also explains some of the differences between data (raw facts that are unprocessed), information (data that is meaningful), and knowledge, which involves people using their own personal experience, skills, and perception to process what they are learning and transfer it into a useful tool.

Information is not useful unless it can be processed and directly applied to the real world as knowledge. The knowledge transfer process includes the transformation of data into generation information, which is structured and sorted into contextual information for certain project teams (Koskinen and Ajmal, 2008).

People learn information and then transfer it into knowledge for their work. Tacit knowledge refers to how people perceive this information and their subsequent behavior with regard to it; further, tacit knowledge comes from the skills and interactions of people, their institutions and feelings. It is, moreover, knowledge that is undocumented, specific to certain contexts, personal, and always changing. Explicit knowledge, however, refers to the external, structured, conscious, documented, and public information that is shared due to the global mass media and ICT. It is very difficult to create an organisational culture and managers often cannot encourage knowledge transfer among teams. Some of the most important aspects for developing a strong organisational knowledge culture include the preparation of the organisation, knowledge resource management, and the organisation of knowledge in order to achieve competitive advantages (Ajmal, 2009: 1-17).

3.7.2. The Practical Implications of KBEs

Some practical implications from the application of KM in developing KBEs include: the need for companies to launch KM training programs that detail ways to transfer, share, acquire, create, and learn from knowledge as individuals and as a team. An entire organisation could benefit from knowledge transfer if all employees were taught during orientation from the HRM that knowledge sharing will benefit the company (Ajmal, 2009: 1-17). Although KM and transfer are important elements of team projects, there are often many major individual, social, and cultural barriers that cause problems with communication and knowledge reporting. Indeed, such barriers to open communication prevent knowledge sharing and transfer in the workplace; this situation occurs since employees feel it is in their own best interest to keep knowledge to themselves for career advancement. This type of closed organisational culture does not foster strong teamwork, so projects will not be as successful, especially when compared to the workings of a more cohesive and unified culture (Ajmal, 2009: 1-17).

Companies should consequently focus on upgrading their organisational cultures in order to increase their capacity for knowledge transfer. This emphasis by companies on upgrading could concentrate on having team projects that encourage knowledge transfer, since these lead to more successful results. These companies could also have HRM orientation programs that would help employees feel more open and capable of trusting each other, so that they will share knowledge and work better together. The

projects that fail in firms are often due to a lack of knowledge transfer and poor communication between team members. Thus, this can easily be altered if the management is aware of the problems.

Such awareness is, however, dependent on the presence of continuous monitoring and measuring systems to evaluate and report the ongoing progress of team projects. The management's policies, processes, and systems reflect what type of organisational culture a company will have. It is therefore necessary for the management to instill strong values and beliefs in all its employees, or, in other words, a shared vision and mission so that employees will feel that they are a part of a team which has common interests and objectives. The organisational culture will then be much stronger and based on shared knowledge, which is easier to transfer between groups (Ajmal, 2009: 1-17).

3.8. THE ROLE OF THE GOVERNMENT IN KBEs

The role of the government and of the private sector in developing knowledge relate to the attraction of foreign multinational corporations and professionals for the purpose of working in that particular country and hence sharing their knowledge and expertise with the domestic companies and people. The policies and strategies that governments formulate to create KBEs include a focus on affordable accessibility to higher education for all people in the society, allowing them to gain knowledge and skills for jobs, and thus enabling these people to support themselves in the future. Furthermore, permitting equal opportunities in education and employment will strengthen the local society and generate more knowledge sharing and innovation through new technologies.

These actions will assist the future development of the KBE, as they will ensure that the citizens are becoming focused on common goals of knowledge generation and sharing for economic development, which will in turn benefit the entire society and future generations. Governments have to integrate progressive economic, political, and social reform policies for numerous aspects of a country: its democracy; equality; gender rights; anti-discrimination laws; humanitarian rights; the protection of intellectual property; the opening of global free trade regulations; international trade

partnerships; strategic alliances for peace treaties; and, investment into technological research and development for the future.

Governments have to create strategies linked to KM in local societies and they have to provide continuous knowledge acquisition, both online and offline ICT support, and job skills training programs. Further, there should be financial assistance available in all higher education facilities, entrepreneurship development programs, and the corresponding provision of scholarships and federal grants for poor people to go to college and benefit from those aforementioned governmental strategies. These policies must all be affordable or sponsored by the government, so that people from all levels of society have access to them, thereby enabling those people to obtain employment and support their families in the future (Westlund, 2008: 1-16).

3.8.1. Governments, ICT and Knowledge-Centred Organisations towards KBE

In order to meet the needs of the local community, to facilitate business, and in order to improve public sector services, global governments must develop their ICT infrastructure, facilities and KM skills, thereby transforming their countries into KBEs. As a result, there must be new policies and regulations to govern the online services and a new infrastructural environment, with adequate telecommunications and transportation facilities. Indeed, there must be an overall investment in the local population, through improved educational institutions, KM programs, and job opportunities for the workforce. Such a transformation similarly demands better-established intergovernmental relationships between the different agencies, the business community, and the local citizens to ensure that the future requirements of the society are communicated effectively.

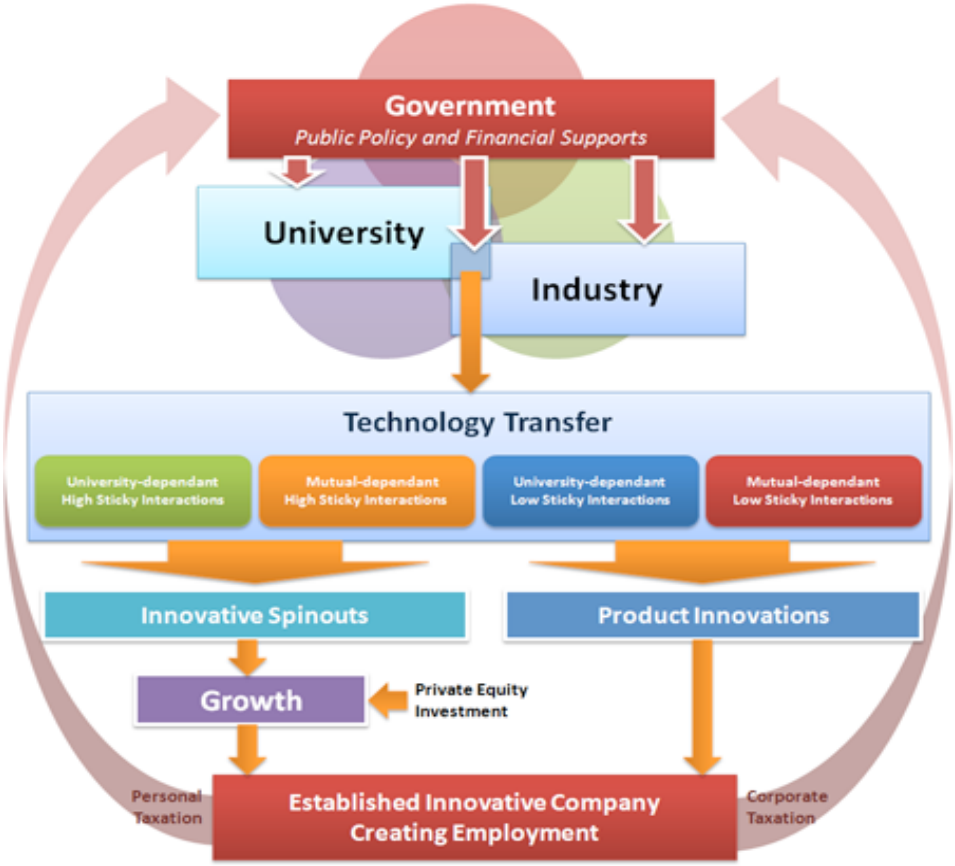
Some of the most important challenges facing the transformation of governments into KBEs involve researching the KM problems in that particular society. Other problems also include understanding the overall governmental process and the action of public agents (Jackson, 2010). Better global business models, relating to the decision making process in the public sector, should therefore be adopted; major technological advances are equally required to manage change in both the government and the private sector. In addition, greater reliability is needed, alongside a transition from a functional focus to a more process focus. Contemporary information economies have

companies that understand how KM in turn means the creation of greater value and more opportunities from intellectual capital, human capital, and other people-related assets, especially when aligned with physical assets (Alavi, 2006; Gold, 2006).

Recalling that knowledge is the acquisition of information through people's thought processes. New knowledge is thus created when acquired information and understanding is added to old knowledge. This knowledge creation can be shared with others to enhance their comprehension of certain subjects. Therefore, governments aiming at KBE should develop the necessary infrastructure for knowledge-centred organisations, which is one that recognises and encourages intangible human assets, such as knowledge creation, knowledge acquisition, knowledge sharing, and KM (Westlund, 2008: 1-16; Tsoukas, 2009: 133-158). Thus, considering that in developing countries, including Qatar, the states and their governments still plays an important role in determining the course of the economy including organizational development, they should consider the institutionalization of the knowledge-centred organisations, which is partly facilitated through the ICT systems, as an essential part of any KBE strategy.

Organisations know only what their employees are themselves aware of; therefore, the knowledge of these organisations is correspondingly limited when they do not employ knowledge workers. Knowledge-centred organisations recognise the value of human thought, understanding, and performance in procedures and business practices. Contemporary organisations must consequently foster corporate climates with trust and loyalty, so that employees feel safe in their knowledge acquisition and knowledge sharing, both to learn and to help others learn. E-government can only be achieved through the use of knowledge workers under KM and who are able to create, acquire, share, and manage their intellectual capabilities with others in the organisation (Rooney, 2010: 71-80).

Figure 3.6: The Role of the Government in KBEs



Source: Matheson (2010)

The role of the government in creating the KBE involves developing public policies related to economic and social reforms; it also involves providing financial support to advance university education opportunities and private industry employment for all citizens. Moreover, the government must integrate technology transfer through college and product innovations, which will thus stimulate growth and jobs throughout the KBE.

All KM strategies must involve the determination of the potential intellectual capital that needs to be managed. KM further involves delivering prompt customer-oriented services from the government within the public sector to the consumers who need them. This action requires the use of Business Process Knowledge (BPK) and Acquired Application Knowledge (AAK) within governments. Correspondingly, KM also needs a Knowledge Development Plan and a Knowledge Centre of Excellence to allocate knowledge worth. Governments must reward employee innovation and

quality input to encourage knowledge in organisations. The knowledge mapping function in both the private sector and e-government can be a major part of the different divisions to allow for intergovernmental communication and knowledge sharing (Rooney, 2010: 204-227; Arthur, 2010: 1-8).

3.9. THE ROLE OF THE PRIVATE SECTOR IN KBEs

The role of the private sector in developing KBEs is to invest in research and development that may not be available to governments, since many multinational corporations have more financial resources and greater managerial expertise. The private sector companies also have to provide affordable ICT and other related services for a society's citizens. Further, these companies have to offer college internships and work placement programs so as to give young people experience in different industries; this situation is similarly complemented by the emphasis on providing many entry-level job opportunities with reasonable pay in order to attract young people to different industries, so that they gain knowledge of a range of areas (Lipsey, 2010: 82-97).

The role of innovation, technology, and education in developing knowledge economies is to provide accessibility to all forms of knowledge using new technological advancements and various global venues. Due to the changing dynamics of KBEs within the global marketplace, numerous products and services can be manufactured, sold, bought, and distributed online over the World Wide Web through Internet access and electronic networks. New technological applications and innovations can be easily promoted and sold internationally over the Internet within short periods of time. This advancement consequently allows these technological applications and innovations to be integrated into society faster than ever, increasing productivity and efficiency in all industries and business and personal activities. KBEs rely on several different but interrelated driving forces that alter competitiveness on a national and business level. These driving forces include the following:

(i) Globalisation – companies, products, services, and industries are becoming more international;

(ii) ICT – technologies are continuously changing and being upgraded to offer greater accessibility, especially in business industries; ICT also allows for knowledge to be distributed and shared throughout the world, which has thereby created a global marketplace of ideas, products, and services that are available to all people, thus resulting in (Adams, 2007: 1-24; Romer, 2007: 1-17):

(a) Knowledge and information distribution – the development of 70% knowledge workers with extensive information and skills to create efficient production;

(b) Computer connectivity and networking – the Internet has now created a global KBE, permitting communication between people on an international scale;

(c) New media – global media sources increase the distribution and production of knowledge, which results in collective intelligence or, in other words, the situation where existing knowledge is easier to access due to globally networked databases that support online interaction between producers and users.

3.10. CASE STUDIES OF SUCCESSFUL/PROSPECTIVE FUTURE KBEs

There are several international examples of successful KBEs that have effectively integrated government policies and strategies. Japan, Korea, and India are, however, currently working on becoming future KBEs, with supportive governments that promote ICT, research, new technologies, and innovation in all industries. According to the United Nations Commission on Science and Technology for Development (UNCSTD) report in 2012, developing nations can only become KBEs if they are able to maintain sustainable development successfully and likewise integrate ICTs into their societies on a long-term basis.

Emerging nations attempting to become KBEs must have the support of the government and extensive resources to develop their collective knowledge, so that they can formulate their future strategic direction. The governments of these nations must also promote knowledge production and KM nationwide, in order to allow for efficient and sustainable national development strategies, effective ICT and

telecommunications policies, and reformed regulatory frameworks. There must also be new, sophisticated organisational strategies and regulations that streamline all policies and guidelines in accordance with the global United Nations Millennium Development Goals to ensure future economic, political, and social sustainability (Bell, 2010: 52-78; Cooke, 2009: 1-15).

As a part of Japan's progress towards becoming a global KBE, its government has promoted an established ICT infrastructure that supports adaptation to innovation rather than new innovations, a difficult but streamlined patent process for new intellectual property, and very few entrepreneurship opportunities. The Japanese social and economic structure is more focused on standardisation than change: a factor that is still preventing the society from becoming a fully integrated KBE. Japan's industries have, moreover, proven to be resilient throughout recessions, with innovative strong governmental leaders focused on tacit knowledge, self-organising teambuilding, worker empowerment, and global knowledge sharing (Rothberg, 2005: 92-116).

With regard to South Korea, its government has been gradually pursuing an aggressive, KBE strategy centred on the four pillars framework. By 1997, South Korea had sustained rapid economic growth and development. In its efforts to become a KBE, the South Korean government thus began to invest heavily in new technology, research and development, ICT, and innovation. The country also had a free trade enterprise system, excellent foreign partnerships, high education opportunities, and a strong national value system based on achievement. Further, the South Korean government has placed/placed special emphasis on the promotion and accessibility of college education, alongside a focus on the potential of science research and development for the future (Dolfsma, 2011: 1-10).

India should be correspondingly considered as another knowledge-driven economy, since it is fast becoming one of the leading global business model examples for future KBEs. This status is mainly attributable to its government's continual support and development of Foreign Direct Investment (FDI) in the country from other nations. India's reputation for being a global ICT leader has similarly created numerous investment opportunities that have subsequently resulted in the development of its infrastructure. Indeed, India's Ministry of Communications and Information

Technology has been very proactive in providing support for its infrastructure, using the ICT industry to propel national revenues. Furthermore, India's government has set specific targets for how they will achieve their goal of becoming a KBE. These objectives include education initiatives, wealth creation, ICT specialisation, innovation, and research into new technologies. The government is concentrating on formulating a knowledge-oriented infrastructure through the use of its National Knowledge Commission (NKC), which launched in 2005. By upgrading its colleges, research facilities, government innovation and technology planning, ICT opportunities, and online literacy programs, India's main goal is to use public awareness programs in order to gain, create, apply, and distribute knowledge on a worldwide scale (Carayannis, 2006: 161-178).

3.11. CONCLUSION

KBEs ultimately rely on the production and consumption of human intellectual capital. In a KBE, the majority of the society's economic activities are comprised of companies whose most significant value is their intangible assets of employee knowledge, otherwise known as intellectual capital. KBEs depend on this human intellectual capital, which is composed from knowledge, job skills, work experience, and education, as their most productive and valuable asset. KBEs also integrate knowledge into every aspect of their society, including people, governments, policies, processes, procedures, systems, companies, products, services, and into strategies for the future. These particular economies focus on developing innovative and educational intellectual services and products, both for domestic use and for global exportation, thus generating extremely high profit value returns. Further, KBEs place an emphasis on the creation of knowledge workers who rely on their intellect, rather than manual labour, in order to generate income. A country's development of a KBE is dependent on the influence of political, economic, social, and technological factors. This development is, moreover, dependent on how these same factors are directed to resolve a country's problems, using KM and knowledge sharing, technology, innovation, and research and development to provide education and employment opportunities for its citizens.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

The term research can be defined as 'an activity which we all undertake to learn more about our environment and the impact that we have upon it' (Ryan *et al*., 1992: 1). This study thus presents an area of "research" along those aforementioned lines, as it aims to explore the notion of a knowledge-based economy (KBE) in Qatar, the factors that affect this concept and its expected outcomes.

Having previously described the fundamental elements involved within the concepts of a knowledge economy and knowledge management (KM), this chapter will then provide details about the research process in terms of the research framework and the data collection and analysis. Since the later chapters offer a detailed empirical analysis and present the operationalisation of the following aspects, this section will then properly identify and discuss the research process by focusing on the research methodology, strategy, design, and method.

4.2 RESEARCH METHODOLOGY

All research follows a designated methodology with the objective of locating it within a particular framework. The research methodology is therefore defined as the process of conducting research or, in other words, it 'is concerned with the process of doing research and, as such, it has both ontological and epistemological dimensions' (Ryan *et al*., 2002: 36). As analysis of the secondary proves, this research is ontologically expressed within a positivist understanding, yet due to its reliance on socially constructed primary data (in the form of the questionnaire survey), it is also comprised of a social constructivist epistemology.

In an operational sense, however, research methodology refers to 'the overall

approach to the research process, from the theoretical understanding to the collection and analysis of the data' (Hussey & Hussey, 1997: 55). This process will entail the use and application of scientific methods to ensure the attainment of favourable and positive results. Indeed, this means that the methodology will have to define research questions, control variables, subgroup categories, data collection systems, and testing processes. Silverman (2006) offers an additional explanation of this particular aspect of the research methodology, stating that it refers to the process by which the researcher will endeavour to study a certain phenomenon. Systematically speaking, the research methodology is delineated as a 'combination of techniques used to enquire into a specific situation' (Easterby-Smith *et al*., 2002: 31).

It is, moreover, useful to note that most social science research divides the concept of a research methodology into two distinct types: quantitative and qualitative (Punch, 2000; Kumar, 2008). According to both Leedy (1993) and Kumar (2008), a quantitative research methodology focuses on numerical data, as quantitative research itself is described in terms of "empiricism" and "positivism"; it further derives from the scientific method used in the physical sciences (Cormack, 1991). This approach to research encapsulates an objective, formal, and systematic process in which the emphasis is on numerical data; it describes, tests, and examines cause-and-effect relationships (Burns & Grove, 1987), using a deductive process of knowledge attainment (Duffy, 1985). Quantitative methodologies correspondingly test theory deductively from existing knowledge through the development of hypothesised relationships and proposed outcomes for the study; qualitative researchers are also guided by certain ideas or perspectives regarding the subject that is to be investigated (Cormack, 1991).

Qualitative research conversely produces and deals with large quantities of data in the form of ideas and words, rather than statistics and numbers, and that 'qualitative data is usually reduced to themes or categories and evaluated subjectively' (Rudestam & Newton, 2001: 36). Taylor and Bogdan (1984: 5) state that a 'qualitative methodology refers, in the broadest sense, to research that produces descriptive data, people's own written or spoken words, and observable behaviour'. Qualitative research is therefore defined by Bryman (1995: 46) as an 'approach to the study of the social world which seeks to describe and analyse the culture and behaviour of humans and their groups

from the point of view of those being studied'. According to Strauss and Corbin (1998), qualitative methods can also provide a better understanding of a relatively unknown phenomenon. Thus, it is apparent that the goal of the qualitative approach is to focus on the subjective state of people in order to gain an insight into its mechanisms and into how people interact.

With regard to the research in this study, which is presented as a systematic attempt to explore, evaluate, and examine the concept of a KBE in relation to Qatar through both a primary and secondary data-based analysis, it consequently benefits from the use of both a qualitative and quantitative research methodology. In other words, a quantitative research methodology is operationalised, as secondary data with positivistic implications is used through the Knowledge Assessment Methodology (KAM) to evaluate Qatar's efforts towards becoming a KBE. Since this particular method does not permit human inferences but instead uses its own systematic construct to produce the analysis, it is perceived as a quantitative methodology. In addition, since the aim of the study is to examine and evaluate the progress made by Qatar in relation to its transition to a KBE, such motivations, by definition, imply a quantitative research methodology.

This current research project is simultaneously framed within a qualitative research methodology, as the secondary factor precipitating this investigation is that of the desire to explore the perceptions and opinions of Qatari university students through a questionnaire survey, which, by definition, refers to the notion of social construction. Thus, the exploration of socially constructed perceptions and their subsequent analysis via an interpretative method illustrates aspects of qualitative research.

4.3 RESEARCH DESIGN

There is no research method and design that is universally applicable, especially given the nature and diversity of the various types of research that are conducted; by extension, research methods and designs must be selected according to the specifications of each individual case. Consequently, it is crucial to select a suitable research design, one that is consistent with the aims and objectives of the researcher in question.

A research design bestows clarity to a research project, as it outlines a number of critical issues, such as the processes used to collect data, the means of analysis, and the techniques for testing the stated hypothesis. It can be perceived that a research design is a practical embodiment of the theoretical angle of the research, thereby providing a means of transferring conceptual research into a practical and empirical study. This empirical aspect of the study will allow the researcher to test their research questions and obtain data, which can then be analysed in order to assess whether the results obtained are consistent with the hypothesis or the overall goals of the research.

Research design can be predominantly classified as exploratory, descriptive, and explanatory. This study, however, benefits from an exploratory design, yet it also employs a descriptive element, as will be later illustrated by Chapter 5 and the other empirical chapters.

Exploratory research is used to assist in the identification of issues and to determine the appropriate research design and data collection processes. Another factor supporting the use of this design is that it has the ability to explore a number of possibilities and scenarios, diagnosing the exact situation that needs to be investigated. It should also be noted that exploratory research design, according to Quee (1999: 52), can be used when the research aims are related to one or more of the following areas: generating new product ideas; developing hypotheses; enhancing the researcher's familiarity with the problem area; achieving greater insight into the problem; defining the interested demographic group; defining and formulating problems; pre-testing draft questionnaires; and, establishing priorities for further research. Ultimately then, the main concern behind exploratory research is to discover ‘ideas and insights’.

The main advantage of using an exploratory case study is that it is characterised by a high level of adaptability (Saunders *et al*., 2007. It is, moreover, important to note that the objective of exploratory research is not to provide a final and conclusive answer, but to explore the research topic in varying degrees of detail. Such a form of research usually represents the initial focus that will become the basis for more conclusive investigations. Exploratory research thus has its own uses, especially in terms of design, the sampling methodology, and the data collection processes. The aim of

exploratory research is therefore to collect preliminary information that will assist the researcher in the definition of problems and the suggestion of hypotheses.

With regard to this study, it is constructed within an exploratory research framework, since it queries the readiness of Qatar for its assumption of the status of a KBE, but it also explores people's perceptions of the subject matter, through which it identifies insights on a topic that is typically marked by a limited amount of material. Further, this is an explanatory form research, as it details the progress of the Qatari economy and the policies and efforts of the Qatari government through secondary data analysis. Given that the main function of explanatory research is to explain the result of certain causal relationships between variables or the differences between groups, this aspect is then demonstrated here through the evaluation of the Qatari economy's progress and of the relevant policies associated with it.

It is important to emphasise that this investigation on Qatar and the concept of a KBE is constructed as a case study, since this format offers a suitable strategy with which to answer the research questions of "what", "why", and "how", which may be analysed using either a survey or a case study (Yin, 1994). Furthermore, Adams *et al.* (2006: 364) state that 'case studies can be performed using either qualitative or quantitative evidence or a combination of the two'. Case studies can also develop material for teaching, create ideas, or create hypotheses that can be tested statistically (Cooper & Morgan, 2008).

Yin (2003) and Stake (1995) use different terms to describe a variety of case studies; Yin categorises them as explanatory, exploratory, or descriptive, further differentiating between single, holistic case studies and multiple-case studies. Stake alternatively identifies case studies as intrinsic, instrumental, or collective. A unique situation, according to Stake (1995), thus requires an intrinsic case study, which means that there is an intrinsic interest in the subject and an awareness that the results have limited transferability. If, however, the intent is to gain insight and understanding of a particular situation or phenomenon, then Stake (1995) would suggest the use of an instrumental case study. Hussey and Hussey (1997: 66) indicate that 'a case study approach implies a single unit of analysis such as a company or a group of workers […] it involves gathering detailed information about the unit of

analysis […] to obtain in-depth knowledge.' Given that this study is focused on Qatar as a single unit of analysis and involves gathering detailed information about the KBE nature of Qatar to develop knowledge, it is thus considered to be a case study.

The concept of the case study can assist the researcher with the investigation and exploration of complex and dynamic phenomena, both when the context influences the phenomena and when the phenomena affect their context; it is equally valuable in the study and discovery of previously overlooked issues (Cooper & Morgan, 2008). Case study research is extremely useful for highlighting issues, raising questions, providing guidance in solving problems, and testing and developing a theory (Cooper & Morgan, 2008). The use of case study research thus proved to offer an efficient approach with regard to this study, since it not only aided the discovery of some new insights, but it also helped to formulate the answers to the research questions of 'what', 'how', and 'why', as is evidenced by the empirical chapters.

4.4 RESEARCH STRATEGY

Another important aspect of the research process is the research strategy; an overview of social science research indicates that there are two types of research strategy: deductive and inductive (Hussey & Hussey, 1997). It is important to note that the researcher must choose the appropriate research strategy with regard to the proposed research questions.

Bryman and Bell (2003: 570) define the deductive research method as 'an approach to the relationship between theory and research, in which the latter is conducted with reference to hypotheses and ideas inferred from the former'. The initial stage of a deductive research strategy is to form a theory as a means of framing the issue and overcoming the problems; findings from the research will appear later, either affirming or invalidating the theory. Furthermore, findings can often propose suggestions that may lead to amendments in, or even revision to, the theory (Gray, 2004; Bryman & Bell, 2007).

An inductive research method is correspondingly defined as 'an approach to the relationship between theory and research, in which the former is generated from the latter' (Bryman & Bell, 2003: 569). This process is usually commenced by the

identification of the problem through an idea; it then focuses on specific hypotheses that need to be formulated. Following this stage, the hypotheses are tested, resulting in the creation of a theory.

Since this current research project employs a quantitative and qualitative research methodology, both research strategies are similarly utilised here. When answering the research question of whether Qatar is prepared for its transformation into a KBE, and when evaluating its progress and policies towards this objective, a deductive research strategy is thus used, as a KBE requires definition. In addition, since this study also collected primary data to gauge the opinions of those students who participated in the questionnaire survey on these issues, it is also considered to exemplify an inductive research strategy.

4.5 RESEARCH METHOD

Following the definition of research methodology, design, and strategy, this section will focus on the operational nature of the research, specifically the research method used for the collection and analysis of data.

A critical aspect of the research methodology is the research method, in that the former is more general than the research method, with the latter referring specifically to the means by which the data is collected and analysed. Sarantakos (2005: 30) describes the research method as 'instruments employed in the collection and analysis of data'. Jankowicz (2005: 220) conversely identifies it as 'a systematic and orderly approach taken towards the collection and analysis of data, so that information can be obtained from this data'. Formally, Bryman (2001: 27) defines the research method as 'simply a technique for collecting data. It can include instruments such as a questionnaire, a structured interview, or participant observation in which a researcher listens and watches others.'

In the social sciences, data collection processes are divided into two main categories: quantitative and qualitative methods. Qualitative methods involve the analysis of data that is collected from document and texts and through field interviews, focus groups, and observations. Quantitative methods, however, involve the collection (and analysis) of data via questionnaires, graphs, tables, and charts, thereby giving a sense

of quantifiable research through statistical methods.

4.5.1 Research Method – Data Collection

There are varying ways that data can be collected; for example, primary data can be obtained through the use of interviews and questionnaires. According to Hussey and Hussey (1997: 67), 'it is usually best to combine data collection methods such as interviews and questionnaires'. For Creswell (1995), the mixing of methods with the integration of quantitative and qualitative techniques has become widely used and increasingly popular in several fields of social scientific research. Indeed, Denscombe (1998: 83) indicates that 'when it comes to selecting a method for the collection of data, certain research strategies will be associated with the use of certain research methods [...] each of the methods has its own particular strengths and weaknesses.'

A triangulation technique has thus become popular in the social sciences, as it combines the use of different data collection processes, thereby making it multifaceted and allowing for a range of data to be collected for analysis. Such triangulation methods combine different types of data collection, or different approaches to looking at data, in order to answer the underlying research questions (Mason, 2002; Patton, 1999; Neuman, 2003; Yin, 1994; Denzin, 1978).

Further evidence in support of this approach to data collection is offered by Jick (1979: 603), who states that 'the effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counterbalancing strengths of another'. This implies that triangulation techniques which involve a variety of data collection tactics allow the researcher to have greater confidence in the data that is obtained. The combined use of qualitative and quantitative methods has become common, as both provide a mutual yet also different understanding of phenomena. In this respect, Punch (2000) stresses that qualitative and quantitative methods can, and should be, combined where appropriate. For example, the use of interviews and questionnaires could then be a feasible way of triangulating results.

There are a number of triangulation methods and the most appropriate one for the situation would need to be selected by the researcher according to the needs of their

research. For example, data triangulation uses multiple ways to collect data; investigator triangulation consists of the use of multiple, rather than single, observers; and, methodological triangulation involves the use of more than one quantitative or qualitative method in the process of collecting data.

With regard to this current research, a quantitative research method is predominantly employed; the study therefore could not utilise a triangulation approach, as a questionnaire survey was solely employed to collect and analyse data.

It should be noted that an attempt was also made to collect data through interviews with policy makers, business circles, and bureaucrats in Qatar via a snowballing method, which proved to be not possible. This can be explained by the fact that individuals with such positions do not appreciate research in general, and also they have hesitant attitude towards participating in interviews and questionnaires oriented research not to expose themselves. In addition, this can be explained by the underdeveloped nature of the civil society, as they feel that such matters are highly important matters and should not be communicated in everyday life with individual researcher. Furthermore, the nature of the individuals in such posts, however, ensured that it was not possible to collect data via this method. A sample of the proposed interview questions can be found in Appendix B. Consequently, this study is directed by a single research method.

4.5.1.1 Data Collection – Questionnaires

A questionnaire is a key tool in terms of gathering primary data. According to Oppenheim (1992), this notion of the questionnaire's importance and efficiency as a research tool for data collection is especially pertinent when the researcher knows precisely what information is needed and how to measure the particular variables that are of interest. A questionnaire is, moreover, defined as 'a list of questions aimed at discovering particular information' (Hannagan, 1986: 40). Collis and Hussey (2003: 173) further define a questionnaire as 'a list of carefully structured questions, chosen after considerable testing, with a view to elicit a reliable response from a chosen sample. The aim is to find out what a selected group of participants do, think, or feel'. In a functional sense, Ghauri and Gronhaug (2002: 94) alternatively report that 'questionnaires are among the most popular data collection methods in business

studies, and the majority of questionnaires are descriptive and/or analytical.'

The questionnaire method of data collection provides a reliable and complete picture, since it enables the participants of the survey to offer genuine responses that may otherwise not be accessible through alternative approaches. Indeed, this method generates richer data by saving the potentially limited time of prospective participants; it is also considered to be the best method of gathering data in a relatively short period from a small or large population who are scattered geographically.

Since this research aims to gauge the perceptions of university students (who are effectively the future stakeholders of the country), a questionnaire is perceived to be the most efficient method with which to collect valuable data. The following sections thus detail the questionnaire survey process; the questionnaire itself is presented in Appendix A.

4.5.1.1.1 Question format

The type and format of the questions in the questionnaire are crucial to the outcomes and effectiveness of the research. Drawing on the critical literature, there are two types of question used in the process of composing a questionnaire, namely, "close-ended type questions" and "open-ended type questions" (Moore, 2000).

According to Moore (2000) and Remenyi (1998), "closed-ended questions" offer advantages for both the researcher, in terms of data collection and analysis, and the subject, as they are easy to complete and because they reduce the possibility of participants giving an ambiguous response. These "closed-ended questions" are, however, relatively difficult to design (Remenyi, 1998). The "open-ended questions" are used to give the participants the opportunity to answer by choosing any method that allows them to express themselves accurately, although the information given may in some cases be lost (Nachmais & Nachmais, 1993).

This research drew on a questionnaire data collection method (composed of "closed-ended questions") for the sake of convenience, as they are far easier to codify for statistical analysis than "open-ended questions". In addition, "close-ended questions" are found to be more attractive to the participants of the survey, since they place less emphasis on individual effort. Furthermore, rather than asking participants to describe

certain key issues, the survey questionnaire designed for this study instead aimed to assemble the perceptions of participants towards predefined topics. In other words, issues were defined and described for participants in the questionnaire, but they were only asked to supply their opinions on them.

Another construct used in the questionnaire for this study is known as a Likert scale question, which is predominantly centred on five categories: 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree'. This type of question leads to a quick response rate from participants, since it requires little effort due to the ease and speed of the process. With regard to this study, the majority of the opinion-based questions are provided with a Likert scale in order to gauge the spread of the various opinions of the participants.

4.5.1.1.2 Sampling

Sampling involves systematic procedures that use a small number of representatives from the population set in order to make a generalisation for the whole demographic group. Easterby-Smith *et al*. (1991: 122) state that 'the main aim of sampling is to construct a subset of the population which is fully representative of the main areas of interest,' as one 'cannot study everyone everywhere doing everything' (Miles & Huberman, 1994: 27). The advantage of using a small but a representative sample of a population is related to the necessary time, effort, and financing required to complete the data collection (Borg & Gall, 1989).

Sampling should, moreover, be conducted alongside a reliable methodology and with an awareness of the underlying objective of representing the population. There are two principle approaches to sampling: probability and non-probability (Punch, 1998). The probability-based sampling can be categorised via three sampling strategies: random, systematic, and cluster. Non-probability strategies are, however, labelled as snowball and convenience sampling (Collis & Hussey, 2003).

With regard to this research, a non-probability strategy was used due to the difficulties in gathering data through questionnaires, as Qatari society is not receptive towards this idea; convenience sampling was then employed. To this end, Qatar University was selected as its administration, when compared to that of other universities, proved

to be more welcoming to the research presented in this study. With their permission and direct help, the questionnaires were distributed to each faculty on certain days. Thus, convenience sampling should be perceived as the sampling strategy for this investigation.

In terms of the reasoning behind the selection of university students for this study, this demographic group was chosen, as it represents an important stakeholder in the future of the country. Indeed, the students' understanding, opinions, and perceptions are important in the identification of the key issues highlighted by this study. In addition, measuring the opinions of the future generations today helps to identify the dynamics of the future and also evaluate their 'state', 'position' and 'readiness' for KBE.

As for the sampled student population being representative, as mentioned the questionnaires were conducted at Qatar University, which was the only state and Qatari university when the questionnaires were conducted. Being a state university, students from various economic stratas as well as from various social, ethnic and national backgrounds can be found in the university. In addition, as opposed to subject specific nature of the some of the foreign and private universities in Qatar, Qatar University provides education in most of the subject areas.

The findings in the empirical chapters justifies the representative of the sample in terms of economic strata, ethnic and national background, education orientation in terms of the subject areas and degrees as well as social background.

The only contested issue in terms of representation could be the sample size. However, considering the nature of the GCC societies, and the difficulty posed in collecting questionnaire survey in the GCC societies, this study put all the efforts in increasing the number of participants; and 143 questionnaires in the end could be collected. Considering other primary research available in the literature from the GCC countries, this should be considered as a success. It should lastly be noted that the extensive nature of the questionnaire in terms of number of questions and the sophisticated language and concepts used in the questionnaire resulted in students refraining to complete the questionnaire despite participating. This again should be considered as a factor in understanding the relatively lower level of sample.

4.5.1.1.3 The design of the questionnaire

During the design process, certain criteria need to be taken into account by the researcher, such as making sure that the questionnaire is clear, that it reaches the participants and that is returned. Indeed, it is necessary to give careful consideration to the construction of each question, further ensuring the provision of a lucid explanation as to the purpose of the questionnaire and offering a clear layout for the questionnaire form accompanied by pilot testing (Saunders *et. al*., 2000).

Thus, Section 1 of the questionnaire focused on personal information, which is also used as a control variable later in the study. Section 2 relates to Qatar's economy and the participants were then asked to express their opinions on the statements provided via the Likert scale. Section 3 offers a number of assertions related to Qatar (to be also graded through the Likert scale), its position and efforts for becoming a knowledge economy. Section 4 includes more specific statements directed at the Qatari education system and knowledge economy, all of which are designed as Likert scale statements; Section 5 presents statements on the topic of Qatarisation. Section 6 aims to explore personal knowledge development and the concept of a knowledge economy with mixed statements and questions constructed around a Likert scale and its accompanying options.

4.5.1.1.4 The administration of the questionnaire

Questionnaires can be administered in many different ways, including via mail distribution, yet for this research, they were personally administered to enhance their effectiveness and the efficiency of the process. In other words, to increase the return rate, the questionnaires were personally distributed at Qatar University's campus prior to classes with the help of university administration.

Questionnaires that are administered personally are a popular method of data collection when the researcher intends to target particular groups of people and/or their place of work, and for when the survey is limited to a local area of research that deals with behavioural aspects of human beings, as is the case with this study. With this type of method, the researcher is able to explain the purpose and importance of the research, to have personal contact with the participants, and to clarify any

questions that they may have (Kumar, 1999). Moreover, this method allows the researcher to check all the questionnaires in terms of their completion, but its main disadvantage is that individuals and organisations may be reluctant to give up their time for the sake of the survey (Sekaran, 2000). Personally administered questionnaires therefore proved to be efficient for this particular study.

Questionnaires were conducted over the course of three different attempts (once in 2011 and twice in 2012) to make sure that the best possible results were obtained. In other words, a pilot attempt was made to ensure that the questionnaire would be successful and accurate. The final version of the questionnaire, following this initial development stage, was conducted from March to June of 2012 on Qatar University's campus.

With regard to the return rate, a total of five hundred questionnaires were distributed around different departments in Qatar University. Despite attempts to make sure that they were all received, this proved to be not possible; for ultimately, 172 questionnaires were returned, making the return rate 34%. Some of these questionnaires were not completed, which further resulted in 143 usable questionnaires. Consequently, the final return rate was 28.6%, which should, however, be viewed as a reasonable sample, especially given the difficulty of gathering primary data in countries such as Qatar.

4.5.1.1.5. The reliability of the data assembled through questionnaire

Although data collection is essential for conducting research, the reliability of the gathered data is also crucial, ensuring that the research is empirical in nature. Reliability is thus defined as 'the extent to which evidence is independent of the person using it' (Ryan *et al*., 2002: 155), implying that the outcomes of the research would be consistent if it were to be repeated using the same data collection method. Clear questionnaire design and the efficient implementation of the research process are thereby expected to increase reliability, which was something that was observed in this study.

In addition, this study sought to perfect the questionnaire as much as possible by conducting two earlier versions of it with a small-sized group, prior to the final

attempt based on previous comments and criticisms; the subsequent results are then perceived to be efficient. Indeed, this process arguably increased the reliability of the data and its analysis, which is something that becomes further apparent when placed within the context of Cronbach's alpha test.

Table 4.1: Cronbach's Alpha Test for Reliability

Case Processing Summary

		N	%
Cases	Valid	111	77.6
	Excluded[a]	32	22.4
	Total	143	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.900	.917	84

The alpha coefficient is an important tool when acquiring evidence for the reliability of the data; it takes a value between 1 and 0 (zero). When the alpha value is closer to 0, it implies that the true score is not measured and that there is an increased chance of an error component, yet when it is closer to 1, all items measure the true score with a minimal error component. This suggests that the greater the value of Cronbach's alpha, the greater the reliability of the scale (De Vaus, 1990).

As is illustrated by Table 4.1, all the items with a Likert scale were included in the reliability test, comprising eighty-four items in total, which constitutes more than 90% of the items, statements, and questions in the questionnaire. The results depict Cronbach's alpha value to be 0.900 (and thus close to 1), thereby insinuating that the possibility of all the items measuring the true scale is very high and that the error component is correspondingly minimised. These findings therefore ultimately suggest a high level of reliability.

4.5.1.2. Data Collection – Secondary Data

The second part of this research is subsequently related to secondary statistical data on the macro economy and business environment of Qatar. To analyse this

data (and as is explained in Chapter 6), the Knowledge Assessment Methodology (or KAM), which is provided by the World Bank and defined as follows, is utilised:

> The KAM is an interactive benchmarking tool created by the Knowledge for Development Program to help countries identify the challenges and opportunities that they face in making the transition to a knowledge-based economy.
>
> The KAM consists of one hundred and forty-eight structural and qualitative variables for one hundred and forty-six countries to measure their performance on the four Knowledge Economy (KE) pillars: Economic Incentive and Institutional Regime, Education, Innovation, and Information and Communications Technology. Variables are normalised on a scale of 0 to 10 relative to other countries in the comparison group. The KAM also derives a country's overall Knowledge Economy Index (KEI) and Knowledge Index (KI).[1]

Thus, the KAM is highly sophisticated, providing the user with options for the direction of their analysis. Further, empirical analysis that seeks to compare Qatar's progress towards the status of a KBE with other countries by using the KAM is presented in Chapter 6.

4.5.2 Research Method – Data Analysis

The analysis of data is a difficult task during the research project, for the researcher needs to select an appropriate statistical technique that is consistent with the types of questions, assumptions, and hypotheses employed during the preceding processes. Analysis itself thus involves both descriptive and analytical methods; some of the main statistical approaches utilised in this study are listed below.

Descriptive Method Analysis:

This is a branch of statistics that endeavours to describe and organise the data which has been collected; the central purpose of this analysis is to arrange the participants' responses into the language of numbers, specifically that of frequencies and percentages. These figures are largely based on the calculation of the mean, median, mode, frequency distribution, percentage distribution, rank, and standard deviation. Consequently, this enables the analysed data to be presented in the form of statistical tables, graphs, or charts in order to assist the reader's observation of any patterns. This

[1] Source: http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAMS/KFDLP/EXTUNIKAM/0,,menuPK:1414738~pagePK:64168427~piPK:64168435~theSitePK:1414721,00.html

particular study uses a form of descriptive analysis that includes percentages and mean and standard deviation.

Analytical Methods:

Since the data collected for this study is not a product of random sampling, it is unlikely that it will be normal; non-parametric tests are therefore used in relation to the inferential statistics, including the Kruskal-Wallis and Mann-Whitney U tests, so as to examine the significance of differences between the subcategories of control variables, such as age and its subgroups.

Use of the Kruskal-Wallis non-parametric test allows for the comparison of more than two independent groups, whereas the Mann-Whitney U test is employed to compare two independent groups in relation to their differences.

Findings are also subject to interpretative methods through which further meanings are attributed to the data.

Knowledge Assessment Methodology (or KAM):

KAM has its own inherent system of analysis, using data in relation to the countries in question. For this research project, the KAM is used to examine, explore, and evaluate Qatar's efforts to become a knowledge economy; Qatari data was thus employed here, even though the system has the capability to compare the specified country with other relevant and competitive nations.

4.6 LIMITATIONS AND DIFFICULTIES

As with all research, there are certain limitations that affect it: the main challenge faced during the conduct of this study has been that of the data collection, whether it was in the form of primary or secondary data. Although there have been some positive developments in the dissemination of secondary data by the Qatari government in recent years, there are still problems which remain in this area. These problems are especially pronounced given that Qatar intends to become a KBE, as its information agencies are not providing the required professional services for the dissemination of information, thereby indicating a major shortcoming among 'one of the four pillars of a KBE'. Such a situation may be attributable to transparency-related

governance issues, yet it also suggests that an important aspect necessary to a KBE is not working effectively within Qatar. Secondary data thus remains an important problem for academic and policy research.

Furthermore, this research project collected primary data through a questionnaire survey directed at university students. The procedure to obtain permission for this arrangement, wherein convincing the authorities led to transaction costs, should equally be considered in relation to Qatar's attempt to become a KBE. In addition, the lack of willingness among the Qatari citizens in their responses to the questionnaires is not an encouraging factor. Indeed, it echoes the scenario previously faced by the proposed interview as a means of data collection. All the stakeholders at a policy-making level did not show any interest in participating in these interviews, ultimately ensuring that this strategy could not be completed. In a study that aims to explore Qatar's efforts and readiness to become a knowledge economy, these issues are directly related to the essence of the investigation and they do not provide encouragement on this front. It is also important to identify the quality of the collected data, as the empirical chapters indicate that quite a number of the participants of the questionnaire opted for the 'neutral' position. If this status is a result of 'not knowing' the answer then it does not inspire confidence in the readiness of the people of Qatar for the transition to a KBE. If, however, this stance is due to the participants' desire not to reveal their position on the subject, it again implies that Qatar's readiness for a knowledge economy is not substantiated due to lack of individual empowerment.

Chapter 5

QATAR'S ECONOMIC DEVELOPMENT AND ITS EFFORTS TOWARDS BECOMING A KNOWLEDGE-BASED ECONOMY: A PREMILINARY ANALYSIS OF TRENDS AND INSTITUTIONALISATION

5.1 INTRODUCTION

The State of Qatar is one of the Gulf Cooperation Council (GCC) countries, based in the Arabian Gulf; it was established in 1973 when the city of Doha developed a formal political format to ensure the longevity of the citizens and of its economic development. In recent years, the country has undergone a major transformation, from a poor desert region in the 1960s to one of the world's leading oil-rich countries. Qatar's government has increased its global partnerships to advance trade and Foreign Direct Investment (FDI). It should also be noted that Qatar is one of the most positive models in the Middle Eastern region due to its reform policies and international trade agreements.

Qatar, with the highest *per capita* of income worldwide, an open government supportive of the people and capitalism, and with extensive growth opportunities, shows a high level of potential future wealth. Qatar has gained its competitive strength for global investment through its recent discovery, exploration, and production of the world's largest natural gas fields. Indeed, Qatar produces only about 1% of the entire world's oil output, yet natural gas and crude oil account for over 80% of the nation's exports. Further to natural gas, Qatar's financial sector is the major contributor to its GDP and economy. In particular, Qatari investment directly through FDI or through its Sovereign Wealth Funds (SWF). In addition to investing in foreign

countries, Qatar also aims to attract FDI; to this end, it has launched several extensive real estate development projects.

Ultimately, Qatar's economy has shown tremendous growth and development in the last twenty years; this development has been so rapid that the human resources of the country do not match the economic growth, thus resulting in the need to attract foreign workers to help with the management of many new companies and projects. Correspondingly, the government of Qatar is currently pursuing an aggressive international marketing campaign to attract more FDI to the country, in an attempt to diversify its economy and move away from financialisation and monetisation. It should, however, be noted that the impact of expansion and globalisation has had various effects on Qatari nationals.

The Qatari government supports an open, free trade economy, which has resulted in double digit growth (12%) in 2012, with GDP US$117 billion, and the highest GDP *per capita* at 103,500. Qatar's economy is mainly based on the export of oil and gas; this arrangement illustrates the need for economic diversification and the importance of transforming into a KBE.

Despite the presence of substantial reserves of oil and natural gas, Qatar has been very successful in its economic diversification, developing the economy through non-oil sectors. Although 65% of Qatar's GDP is made up of contributions from the oil and gas sector, the non-oil sectors have recently increased their contributions to the country's wealth.

Even with these considerable reserves of natural gas, which comprise 14% of the world's supply, Qatar only has about thirty-seven years of oil reserves left at the present output levels. Qatar also has a population of 833,000 comprised of people from various nationalities, yet only 27% of this figure represents Qatari nationals, at about 300,000 people. This rather unbalanced weighting among the population for native Qatari citizens results in serious competition for jobs from expatriates with more work experience and better educational qualifications. For these aforementioned reasons, it is essential that the country continues to develop its non-oil sectors, so as to become a knowledge society that can survive without natural resources (Fisher, 2008: 1-4; Abu Baker, 2008: 1-7).

The literature review chapters previously identified the importance of knowledge and its management for successful economies in the future. Further, the survey of Qatar's economy and its development provided evidence of the important structural changes that have been achieved in Qatar, transforming from a small traditional economy into a modern, knowledge-oriented economy with the objective of creating a sustainable society, beyond the reliance on oil and gas reserves.

This chapter, as being the first empirical papers, aims to assess the Qatari economy with the intention of deciding whether it can already be considered as a KBE, or whether it is still striving to attain the status of a KBE. In other words, after identifying the developments within the Qatari economy, this section will endeavour to present an evaluation of the KBE nature of Qatar. During this process, special attention will be paid to the research-related developments in the country.

Furthermore, it should be noted that the statistical data for this chapter was collected from the following sources: the Qatar Information Exchange (http://www.qix.gov.qa/) and international organisations that include the World Bank and the International Monetary Fund (IMF). Data, with regard to the competition index, was also obtained from specialised institutions such as the World Economic Forum. Unless specified otherwise, the data source throughout this section is, however, mainly that of the Qatar Information Exchange.

5.2 QATAR'S ECONOMIC DIVERSIFICATION AND EXPANSION

Qatar has witnessed a rapid period of globalisation and economic diversification, moving away from the oil sector that it has traditionally relied on for over forty years. The consequences of such rapid development for Qatar, and the impact that they will have on its economy in the future, may prove detrimental to its survival. Qatar has diversified its economy into several non-oil sectors and it has been very successful in expanding other markets globally (The Report – Qatar 2011). The future implications arising from dependence on these sectors, and without the support of oil revenues for the government's rapid expansion, could be those of too much diversification in too short a period for Qatar to assimilate properly.

Qatar began to diversify its economy when the global oil industry began to fluctuate. Qatar's government helped this economic development by reorganising and enhancing the country's infrastructure to adapt to the new changes. Qatar's economy began to benefit from the FDI that infused the country with new corporate capital and real estate development projects. The future of Qatar will be determined by how well it adapts to the process of economic diversification, now that the oil revenues are completely depleted (The Report – Qatar 2011).

Qatar is the most modern and diversified economy in the Middle East. The modern nature of the country comes from the way through which economy, business and organisations are structured and operated. As for the diversified nature of the Qatari economy, while it is still an oil and gas dominated economy, the country has been investing in other areas including the financial sector within the country as well as in foreign countries. Therefore, relatively Qatar is better diversified comparing to the neighbouring countries. As a result, it has established itself as a paradigm for neighbouring states that are looking to expand their markets away from oil. Under the governmental guidance of the Tourism Department, the Chamber of Commerce, the Economic Department, and the Qatari Government of Economic Planning, Qatar has made rapid progress in developing several strategic economic diversification projects that will allow it to survive and prosper, even without its oil wealth (The Report – Qatar 2011).

Some of the most useful strategies that the Qatari government has supported involve trade growth and development in Qatar through foreign investment in local companies, joint partnerships with Qatari citizens, and business opportunities for international corporations. These strategic alliances are useful as they offer a means to gain insight, knowledge, and new technologies from more developed western nations. The Qatari government's strategic planning and resource management enabled the country to cope with the loss of oil revenues through the economic diversification into the tourism and freehold real estate property sectors, which in turn led to rapid growth and development within the country (Martin, 2006: 1-6).

Oil, as was previously insinuated, brought instant wealth to Qatar during the 1960s, especially when international demand allowed the country to expand its exportation.

By the 1970s, oil production and exportation helped Qatar to grow gradually through the construction of roads and infrastructure, connecting the various parts of the country. Gold also became a source of profitable income for Qatar during the 1970s, with annual exports of two hundred and fifty tons bringing in £80 billion to the country.

During the late 1970s, Qatar's rulers had begun to plan strategies that would create a totally modern and dynamic economy. By 2011, oil production accounted for 99% of Qatar's incoming revenues. Most of these profits were spent on the expansion of Qatar's infrastructure, telecommunications, transportation system, and building development. Qatar's development is based on an integrated system supported by the largest international airports, dry docks, and import-export ports in the Middle Eastern region. Government-funded development projects, including hotels, resorts, and communication and utility advancements are also important to Qatar's continued growth (Allen, 2005: 1-3).

Qatar can continue to thrive economically as it diversifies, reducing its dependence on oil and placing greater reliance upon other sectors, such as real estate, construction, and hospitality and tourism, through strategic planning and resource management. Effective urban planning and infrastructure preparation during rapid expansion and development due to an increase in globalisation are all necessary throughout the period of economic diversification. As a result of the country's expansive wealth, combined with strategic planning, the government of Qatar has achieved what most small nations could never possibly accomplish.

Qatar is now one of the major central locations for financial opportunities, cultural experiences, and commercial trade in the Middle East. The Qatari government has been increasing its attempts at diversification into various industries so as to appeal to foreign investors. Qatar has also been linked with many different American and European companies in order to develop its natural gas and real estate sectors. The building and construction sector of Qatar has recently increased its contribution to the GDP, now providing over 5.4 billion Qatari Riyals. This explosion of wealth is similar to that observed in the expansion of such other countries as Dubai and the United Arab Emirates (UAE), where the real estate development projects began in the

1990s and then continued on into the billions. Qatar's capital, Doha, has been at the centre of this development, with three-fifths of the population living within its limits. Qatar's construction sector underwent a growth spurt of over 16.3 by 2011; this was mainly attributable to the governmental support of globalisation throughout all industries (Martin, 2009: 1-4).

Although the process of economic diversification has been very successful in providing the groundwork for the initial stages of Qatar's expansion, questions still exist as to whether Qatar can sustain such progress for the next five to ten years without a recessive backlash. By developing a stricter planning and resource management strategy, using techniques such as management by objectives (MBO), the Qatari government will be better able to predict future diversification opportunities (Block, 1971: 13-17; Crampton, 2005: 1-4).

5.3 DEVELOPMENTS AND TRENDS IN THE ECONOMIC GROWTH AND DEVELOPMENT OF QATAR

The best measure of a country's economic performance is obtained from an analysis of its GDP, as it shows (either in nominal or real figures) the growth of economy and economic performance from one year to another.

Table 5.1: Trends in Qatar's GDP and GDP Per Capita Income (US$ Billion)

Year	GDP	GDP Growth (%)	GDP Percapita
1995	6	1	35,000
1996	7	1	38,000
1997	10	1.5	47,000
1998	11	1	50,000
1999	12	1.5	51,000
2000	15	4	54,000
2001	16	6	56,000
2002	17	3.4	56,000
2003	18	8.5	58,000
2004	24	8.7	68,000
2005	24.5	8.8	66,500
2006	26	7	74,000
2007	71	27	76,00
2008	91	13	78,000
2009	101	10	78,000
2010	151	50	88,000

As can be seen from Table 5.1, the GDP of Qatar in nominal terms in terms of US$ increased over twenty-fourfold during the period of 1995-2010. It appears that 2005 was an important break point, since from then onwards the GDP growth rate has been immense, reaching fifty in 2010. Further, as depicted in Table 5.1, similar trends can be seen in GDP *per capita* income; this was US$ 35,000 in 1995 and it increased to US$ 88,000 in 2010, finally reaching about US$ 107,000 in 2012. Thus, the Qatari economy has performed extremely well over the last decade in particular.

To provide further evidence, the plot of GDP figures in Figure 5.1 depicts these trends. Figure 5.1 also reveals that the gradual increases in GDP until 2005 were transformed into more pronounced increases in the following period. During the period of 2009-2010, even greater increases were observed in the GDP figures of Qatar. Such a jump can be attributed to the increases in the gas revenues, as Qatar expanded its gas extractions; and also the returns from overseas investments coupled with Qatar's expansive infrastructural investments.

Figure 5.1: Trends in GDP (in US$ billion)

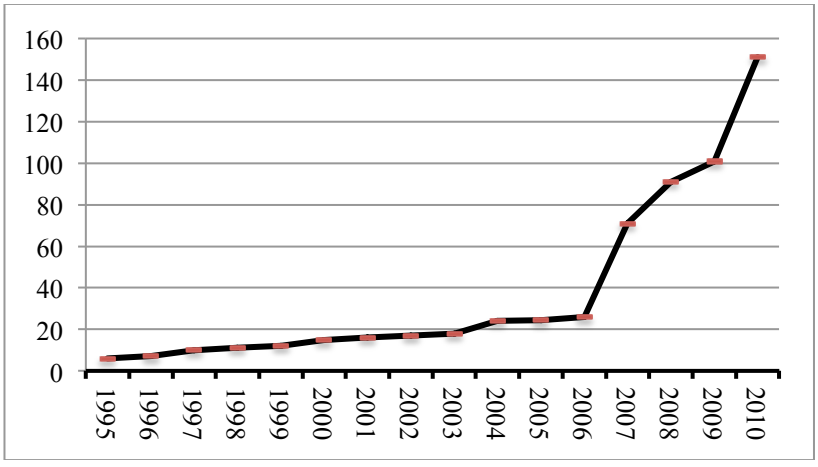


Table 5.2 illustrates a similar trend in the GDP figures and GDP growth for Qatar in *Qatari Riyal* from 1995 to 2012. What can be seen in the aforementioned table is that about twenty-threefold increases have been registered in GDP value in nominal figures for Qatar. Given that inflation is not a significant issue in Qatar, the trend observed in Table 5.2 also reflects the increased performance of the economy over the last decade in particular.

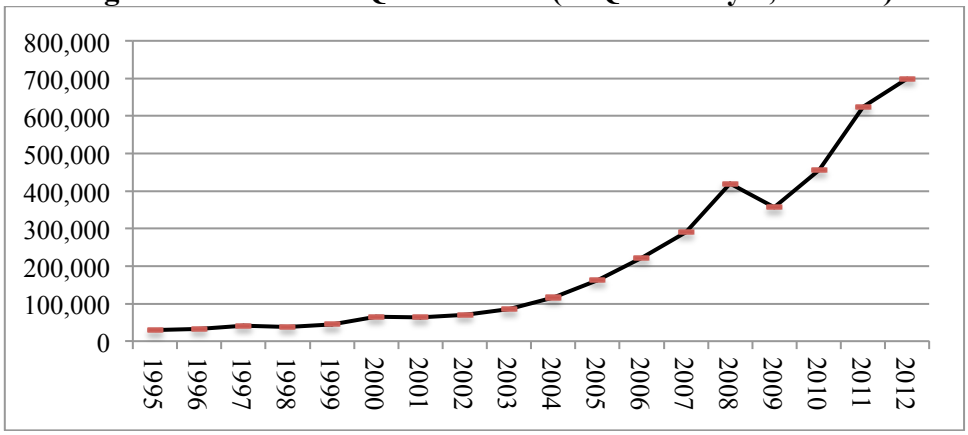
Further examination of the data presented in Table 5.2 indicates that the average growth rate of GDP over the period of 1995-2012 was 21.8% per annum. When considering the size of the economy, this is indeed an immense growth rate.

Table 5.2: Trends in Qatar's GDP (Million Qatari Riyal)

Year	GDP (Million Qatari Riyal)	GDP Growth (%)
1995	29,622	
1996	32,976	11.32
1997	41,124	24.71
1998	37,330	-9.23
1999	45,111	20.84
2000	64,646	43.30
2001	63,840	-1.25
2002	70,484	10.41
2003	85,663	21.54
2004	115,512	34.84
2005	162,091	40.32
2006	221,611	36.72
2007	290,151	30.93
2008	419,582	44.61
2009	355,986	-15.16
2010	455,445	27.94
2011	624,173	37.05
2012	700,345	12.20

The growth path of the Qatari GDP can be seen in Figure 5.2. Despite the adverse impact of the global financial crisis in the period of 2007-2009, the economy has shown immense growth in the period following 2005, especially with regard to the years since 2009.

Figure 5.2 Trends in Qatar's GDP (in Qatari Riyal, Million)



This growth path is particularly important in the face of the "resource curse" hypothesis, which suggests that resource-rich countries face an inevitable problem of low economic performance. Qatar, however, managed to invest its oil and gas revenues strategically in order to accelerate its economic growth, becoming the richest country in the world in terms of *per capita* income.

Table 5.3: Qatar's GDP Share of World Total

Years	GDP (PPP) - share of world total
1980	0.10%
1990	0.06%
2000	0.08%
2010	0.20%
2015	0.24%

Source: http://www.gfmag.com/gdp-data-country-reports/195-qatar-gdp-country-report.html#axzz2QB85UwTo

Not only has Qatar has become a successful economy in its own right, but its contribution to the world economy has also simultaneously increased. As is illustrated by Table 5.3, Qatar's share of the total world GDP (in terms of purchasing power parity) has increased from 0.1% in 1980 to 0.2% in 2010, and this figure is expected to increase to 0.24% in 2015. In terms of contributing to the world's economic wealth, Qatar's contribution has therefore increased over the years.

Table 5.4: Sectoral Distribution in the Qatari Economy (%)

Years	Manufacturing	Services	Oil
1995	2	5	93
1996	2	7	91
1997	3	10	87
1998	3	15	82
1999	4	20	76
2000	4	25	71
2001	5	25	64
2002	5	26	69
2003	5	27	68
2004	5	28	67
2005	6	21	73
2006	7	20	73
2007	8	19	73
2008	8	19	73
2009	9	18	73
2010	9	22	69

Although Qatar has demonstrated an excellent performance in its economic growth, it is still criticised for relying on oil and gas revenues. To investigate this claim, Table 5.4 depicts the trends in the sectoral distribution of the Qatari economy.

Table 5.4 thus emphasises that despite a decrease in its share from 93% in 1995 to 69% in 2010, oil and gas revenues still play a predominant role within the Qatari economy. And yet this situation has not resulted in the hypothetical "resource curse"; this emphasis on oil and gas has instead provided Qatar with the necessary financial strength with which to develop and diversify its economy. Consequently, the share of the service sector in the Qatari economy increased from 5% in 1995 to 22% in 2010. Similar trends can also be observed in the share of the manufacturing sector, as the share of the Qatari GDP increased from 2% in 1995 to 9% in 2010. Economic diversification policies have then been reasonably successful in terms of generating economic wealth from a non-oil sector. Oil revenues, as previously stated, have been the main resource behind such acts of diversification. The sustainability of this diversification must, however, be questioned when confronted by depleting oil and gas reserves. Indeed, this factor points to the importance of the further diversification of the Qatari economy through its proposed transformation into a KBE with the use of revenues acquired from oil and gas resources.

Table 5.5: Role of Public Sector and Private Sector in GDP

Years	Private Sector's Role in GDP (%)	Public and Mix Sector's Role in GDP (%)
1995	13	87
1996	12	88
1997	11	89
1998	10	90
1999	12	88
2000	11	89
2001	10	90
2002	13	87
2003	12	88
2004	11	89
2005	10	90
2006	12	88
2007	9	91
2008	10	90
2009	13	87
2010	20	80

Table 5.5 provides additional analysis in relation to economic diversification, offering evidence to substantiate the aforementioned statements. For as the time series data indicates, the private sector's share in the total GDP has increased from 13% in 1995 to 20% in 2010; more recent data further suggests that it has even increased to about 30%. The role of the public sector, however, remains very prominent in the economy, coupled with mix or joint ownership with the public and private sector together, all of which is apparent in the data presented in Table 5.5.

In order to contextualise the nature of public and mix ownership, it is therefore important to define these key terms as follows:

> Private – it includes the establishments that are owned by one individual or a group of individuals, whether they are citizens or non-citizens or whether they are natural or artificial persons. These establishments also include places where citizens or non-citizens participate in its capital and include joint-stock companies where citizens or non-citizens own its capital.
>
> Public – it includes establishments that practice the productive activity of goods and services, and where the government owns its total capital. The government gives these establishments or companies the act of disposal, not only in managing production, but also in the utilisation of funds. These establishments or companies must be able to preserve its operating balances and commercial credit, and be able to finance some or all capital formation from its savings, depreciation reserves, or lending.
>
> Mix – the sector that includes establishments which the government contributes to in its capital with another entity, whether this entity is national or foreign.[1]

Given the rich financial resources of Qatar, the government has initiated a large number of investments with private investors, which have in turn led to an increased share of the mix sector in the Qatari economy.

[1] Source for this official definition: http://www.qsa.gov.qa/eng/publication/economic_publication/2012/Qatar%20Economic%20Statistics%20at%20Glance.pdf

5.4 QATARI ECONOMIC DEVELOPMENT

After determining the economic growth path in Qatar and the economic performance of the Qatari economy, this section further aims to identify the economic development performance of the country, through reference to the Human Development Index (HDI) created by the United Nations Development Programme (or UNDP). During this process, social expenditures will also be examined to understand how the country has been investing in education and health as part of its efforts towards becoming a KBE.

As is demonstrated within Table 5.6, Qatar's performance in terms of the HDI has been good, since its ranking was fifty-five in 1994, and, according to the Human Development Report of 2012, it managed to raise its position to the rank of thirty-six. Thus, over the course of sixteen years, Qatar has improved its HDI position by seventeen ranks.

Table 5.6: Human Development Index Ranking for the GCC: 1994-2010

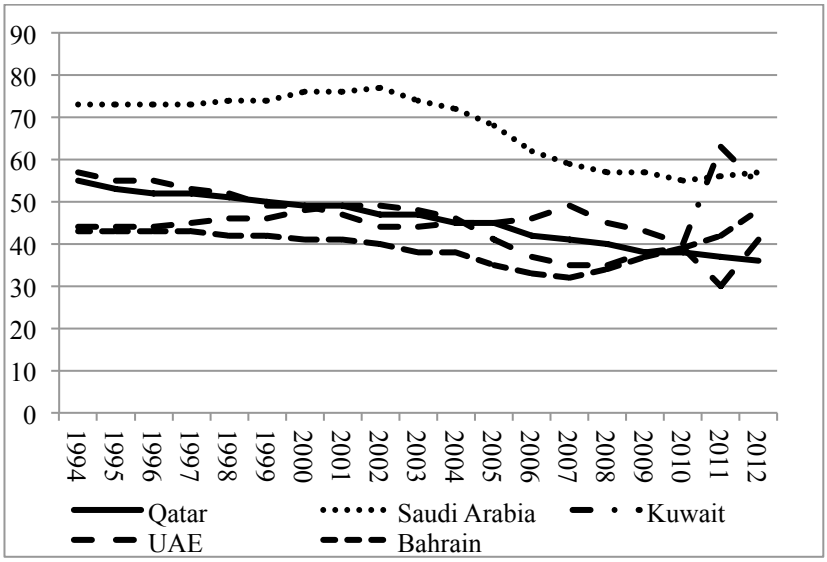
Years	Qatar	Saudi Arabia	Kuwait	UAE	Bahrain
1994	55	73	57	44	43
1995	53	73	55	44	43
1996	52	73	55	44	43
1997	52	73	53	45	43
1998	51	74	52	46	42
1999	50	74	49	46	42
2000	49	76	49	48	41
2001	49	76	47	49	41
2002	47	77	44	49	40
2003	47	74	44	48	38
2004	45	72	45	46	38
2005	45	68	45	41	35
2006	42	62	46	37	33
2007	41	59	49	35	32
2008	40	57	45	35	34
2009	38	57	43	38	37
2010	38	55	40	39	39
2011	37	56	63	30	42
2012	36	57	54	41	48

Data Source: Human Development Report (Various Years)

In comparison to both other GCC and Middle Eastern countries, Qatar held the highest score in the HDI by 2012. Among the Muslim countries, only Brunei has been in a better position than Qatar. During the same period, Saudi Arabia's position rose

sixteen ranks; Kuwait witnessed a rise of only four ranks; the UAE saw an increase of a mere three ranks; and, Bahrain's position dropped by five ranks. Among the GCC countries, both Qatar and Saudi Arabia can therefore lay claim to some remarkable achievements with regards to the HDI ranking, yet Qatar remains superior here.

Figure 5.3: Trends in HDI for GCC Countries



HDI trends for the GCC countries can also be perceived in Figure 5.3, where Qatar's gradual and steady performance, rising through the HDI rankings towards a better position, is clear.

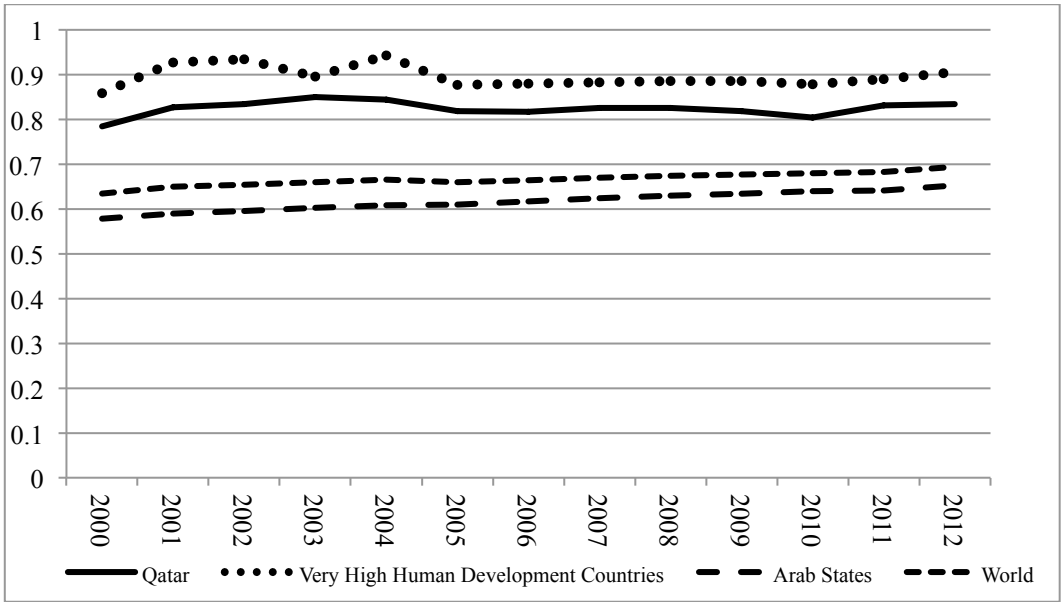
By displaying the HDI values from the period of 2000-2012, Table 5.7 depicts the HDI performance of both a select group of countries and the world as a whole in comparison to Qatar. During the period in question, Qatar has demonstrated better HDI values than the world and the Arab States. According to the trend revealed in Table 5.7, Qatar has for the most part maintained its position in relation to other countries. This is similarly evidenced by the trends of longer periods in Figure 5.4; indeed, Qatar follows the same trend as that exhibited by the very high-income countries but on a lower level.

Table 5.7: Qatar HDI Value Comparison with Other Country Groups

Year	Qatar	Very High Human Development Countries	Arab States	World
2012	0.834	0.905	0.652	0.694
2011	0.831	0.889	0.641	0.682
2010	0.803	0.878	0.639	0.679
2009	0.818	0.885	0.634	0.676
2008	0.825	0.885	0.629	0.674
2007	0.825	0.882	0.623	0.670
2006	0.816	0.879	0.617	0.664
2005	0.818	0.876	0.609	0.660
2004	0.844	0.942	0.608	0.665
2003	0.849	0.895	0.602	0.659
2002	0.833	0.933	0.595	0.654
2001	0.826	0.927	0.589	0.650
2000	0.784	0.858	0.578	0.634

Data Source: Human Development Report (Various Years)

Figure 5.4: Qatar and Other Country Groups Comparison for HDI Value



Despite having the highest *per capita* income in 2012, Qatar is ranked at the thirty-sixth position in the HDI, situated behind both Brunei in the Muslim world and all of

the other industrialised democracies on the global scene. Other countries, such as those within the European Union (EU), thus manage to achieve higher HDI values with lower *per capita* income. This situation implies that Qatar has not been as efficient as other high income countries in developing its HDI, since considerable income has been used to reach the somewhat insignificant rank of thirty-six in 2012, at least comparatively speaking.

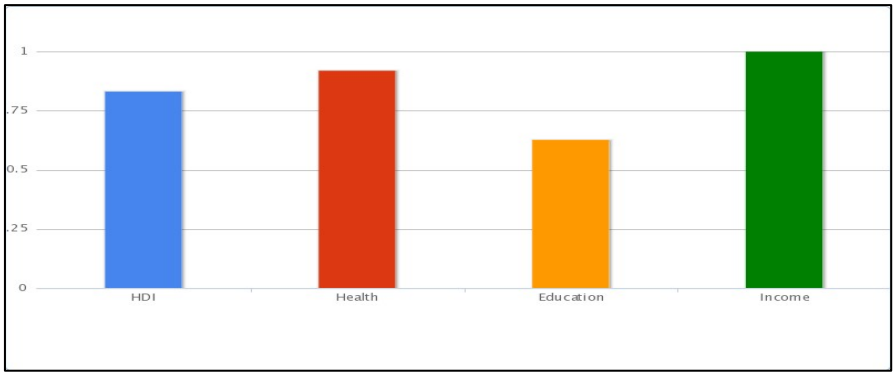
As part of the human and social development, Table 5.8 depicts the ratio of health and education expenditures to GDP, which in turn has implications for a KBE.

Table 5.8: Social Expenditures in Qatar

Years	Health Expenditures/GDP Ratio	Education Expenditures/GDP Ratio
1995	.4	1
1996	.5	1
1997	.6	1
1998	.7	1
1999	.8	1
2000	.9	2
2001	.9	2
2002	1.1	2
2003	1.3	3
2004	1.5	3
2005	2	3
2006	2.6	4
2007	3.5	4
2008	4.3	5
2009	5	5
2010	6	6

As is evidenced by Table 5.8, Qatar allocated large amounts from the government budget to education and health. When considering that the GDP growth has been rather large, even high increases in education and health expenditures (as nominator in the ratio) may not then be completely reflected by this ratio. For as can be seen in the table, the education to GDP ratio increased from 1% in 1995 to 6% in 2010, thereby implying a sixfold increase over a fifteen year period. With regard to education, the expenditures to GDP ratio thus indicates the country's achievements, given that the value was a mere 0.4% in 1995 but this later increased to 6% in 2010.

Figure 5.5: Qatari Social Indicators and HDI



Source: UNDP HDR (2012)

Figure 5.5 sheds further light on both education and health expenditures and income increases in comparison to HDI values. It should be noted that all these categories are measured as index values.

From Figure 5.5 it is apparent that although the income index shows a complete success, the indices for Human Development and health and education do not echo this achievement. The health index value is, however, higher than the one assigned to education, indicating a better performance in the case of health-related developments.

5.5 LOCATING QATAR IN THE GLOBAL ECONOMY

Pervious sections have focused on the economic and social development of Qatar; this section, however, intends to locate Qatar's place in the global economy by focusing on comparative indices, such as the competitiveness index and the Economic Freedom Index (EFI). Competitiveness index provides a benchmark to compare the economic performance of a country in terms of innovation, regulation and productivity. On the one hand, it indicates the innovative and productive nature of the country as to how a country puts all the efforts to remain at the competitive edge. On the other hand, it implies how open the economy of a country is open. This related to KBE, as KBE indicates innovativeness and productivity of a country, which indirectly in a consequential manner refers to competitiveness. The same is true for EFI as well; as the EFI score is indirectly related to the KBE nature of the economy.

As can be seen in the Global Competitiveness Ranking (GCR), depicted by Table 5.9, Qatar made important advances in the development of its economy in terms of the competitiveness ranking.

According to the information contained in Table 5.9, Qatar's performance in increasing the competitiveness of its economy has been a great success: within the GCR it was placed in the sixty-second rank in 2000 and it managed to rise to the fourteenth position in 2012. This shift in positioning provides evidence for Qatar's recent attempts to become a modern economy and its preparations for transformation into a KBE.

Table 5.9: Global Competitiveness Ranking

Years	**Global Competitiveness Ranking**				
	Qatar	Saudi Arabia	Kuwait	Bahrain	UAE
2000	62	93	69	71	50
2001	59	89	65	67	48
2002	55	87	62	63	45
2003	52	81	60	61	42
2004	48	78	57	58	39
2005	46	75	55	56	37
2006	38	72	52	53	35
2007	31	67	49	50	32
2008	26	63	44	48	32
2009	26	59	42	46	28
2010	22	55	39	43	24
2011	17	21	35	37	25
2012	14	17	34	37	27

Data Source: Global Competitiveness Report (Various Years)

Qatar's achievement in creating a successful competitive economy is particularly visible through comparison to other GCC countries. The success of the Saudi Arabian economy is important to acknowledge, but Qatar's performance in comparison to Kuwait and Bahrain is especially remarkable. Given that the UAE is considered to be an open economy, its comparison with Qatar offers further evidence for Qatar's success.

Since Qatar intends to develop a KBE, the EFI should also be considered as an important indicator for its internationalisation. It should, moreover, be noted that the EFI is produced by the Heritage Foundation, which is a composite index produced by

ten liberties that define economic freedom: Business Freedom, Trade Freedom, Fiscal Freedom, Freedom from Government, Monetary Freedom, Investment Freedom, Financial Freedom, Property Freedom, Freedom from Corruption, and Labour Freedom.

Table 5.10 provides recent data on the EFI for Qatar and other GCC countries. Although Bahrain is ranked as the best country in the GCC for economic freedom, placing twelfth in the world's rankings, Qatar's performance in developing its economic freedoms is nevertheless remarkable. For Qatar's EFI value was seventy-two in 2007, yet in five years' time it rose to twenty-five, moving forty-seven ranks; Bahrain in the same period correspondingly advanced only twenty-seven ranks. When compared to other GCC countries, aside from Bahrain, Qatar is demonstrably advanced in terms of economic freedoms. Qatar, together with Bahrain and the UAE, is ultimately considered to be "mostly free" according to the classifications introduced by the EFI; Saudi Arabia and Kuwait are similarly classed as 'mostly free'.

Table 5.10: Economic Freedom Index

Years	**Economic Freedom Index**				
	Qatar	Saudi Arabia	Kuwait	Bahrain	UAE
2007	72	85	57	39	74
2008	66	60	39	19	63
2009	48	59	50	16	54
2010	39	65	42	13	46
2011	27	54	61	10	47
2012	25	74	71	12	35

Data Source: Index of Economic Freedom (Various Years)

It can therefore be claimed that Qatar has successfully merged with the global economy; its investments in different parts of the world, including in the United Kingdom (UK), should also be considered as an indication of its integration within the global economy. Thus, Qatar is now an important economic player in the world economy.

Qatar's emphasis on globalisation and expansion is comprised of the processes of developing industries from one country to another in order to target new markets, sell new products or services, and regenerate capital into different economies for

investment purposes. A major feature of Qatar's globalisation today is how it involves both positive and negative factors.

Globalisation may help countries to develop their economies; this process, however, also brings with it a widening gap between the rich and poor social classes. Although one of the benefits of globalisation is the ability to offer new goods to foreign consumers, the negative aspects also include forcing smaller, local companies out of business, since they cannot compete with global firms. Qatar's globalisation thus has many different benefits, such as allowing the local market to enjoy new foreign products and services, yet it equally creates economic differences between the social classes, and the encouragement of so many overseas companies may bankrupt some of the smaller local businesses (Bernstein, 2009: 1-8).

Other aspects of globalisation that affect Qatar are observed in the provision of new financial gain (through the use of FDI) from different sources to new economies. Multinational and international corporations have been the key to globalisation over the past few decades. These are companies that are not only able to maximise profits on a national level, but they are also able to enter global markets, promoting the same or similar products, and still emerge as the leaders in that particular industry. Qatar's policy of globalisation can be identified as being interrelated with expansion and capital gain.

There are many elements of Qatar's policy of globalisation that demonstrate how such a course is in the country's best interests, increasing its FDI in preparation for its transformation into a KBE. Qatar's economic globalisation involves connecting international financial and investment activities through transnational trade, currency flows, and relocation. Correspondingly, Qatar's environmental globalisation denotes an international effort to improve or protect the natural ecosystem or environment. Further, Qatar's cultural globalisation explains how different nationalities from a range of cultures, speaking a variety of languages and following diverse traditional customs, can live together in multicultural societies akin to Qatar. To find work, many people migrate to the areas where there is expansion and development. This action leads to new jobs becoming available and the chance for a new way of life (Craven, 2009: 1-2).

Within the global trade and service sectors, many developing nations such as Qatar may have less innovative ideas, technological advances, and strategic advantages than their foreign competitors because their organisations do not have the capability to handle international corporations without the aid of other countries. The financial sector in several underdeveloped countries has also been a burden to their own expansion, since it is often strictly regulated and monitored. Qatar is fortunate enough to have a government that has been very supportive of financial liberalisation and transparency in business. In the future, Qatar's more westernised approaches to development collaboration with other countries will concentrate on investment within fundamental infrastructures and human resources. According to Carter (2006), new developing nations akin to Qatar must adopt western financial and accounting policies in order to appear attractive to foreign corporate investors. The government of Qatar has also been creating new strategies for investing in the future of Qatari university students who will soon graduate and who may experience how difficult it is to find jobs in Qatar, given the presence of so much foreign competition. An accurate assessment of the changes arising from Qatar's expansion, examining how these changes will affect the next generation's ability to attain a job, suggests that the most effective and logical advancement strategy the government can pursue is the transformation from an industrial society into a KBE (Craven, 2009: 2-5).

5.6 QATAR'S FUTURE INVESTMENT GOALS

The Qatari government is currently focused on developing the country's future potential by setting many different expansion and globalisation goals. Qatari nationals about to graduate from university and pursue careers are considered to be the most valuable assets that the government has invested in for the future. Indeed, the government of Qatar has begun major local and global investments in educational institutions, overseas universities, and computer institutes. It is, moreover, establishing several strategic international alliances with global multinational corporations as business stakes in the future of the Qatari economy. One of the main future goals that the Qatari government is pursuing involves developing the oil, natural gas, and banking sectors of the country's economy, so as to withstand the huge infrastructure investments into the construction and educational markets, thereby

expanding the country and making it a global competitor among KBEs (Bernstein, 2009: 1-6).

The Qatari government has considered some of the potential future obstacles that may hinder its long-term strategic plan to become a KBE centred on globally-benchmarked best practices. Some of these barriers to long-term success may include (Bernstein, 2009: 1-6):

(i) Determining whether Qatar is a practical investment opportunity for global investors, such as international universities and multinational corporations;

(ii) Discovering what the main Qatari investment opportunities are for the future, especially within the knowledge and service sectors;

(iii) Determining whether Qatar's economy can withstand the continuous construction and changes involved in rapid expansion (compared to the UAE, whose economy and people have adversely affected from the same type of growth);

(iv) Determining what some of the positive and negative effects of rapid economic globalisation will be for Qatar and how the government can help the country's population adequately adapt to these effects

Some of the Qatari government investment assessments for the future that are included within their strategic planning are as follows (Craven, 2009: 1-12):

(i) Qatar's rapid globalisation presents major corporate investment opportunities provided by the government, such as sports tourism projects that range from hosting the Asian Games in 2006 to accommodating the Summer Olympic Games in 2014;
(ii) Qatar's expansion of its construction and real estate sector will provide another major area that the economy can depend on for contributions to the GDP;
(iii) Qatar needs to attract more FDI to the country in order to help fund its development projects, such as the expansion of its port and railway;
(iv) Qatar's government will have to re-evaluate its economic and educational reform policies and open its markets to include more free trade zones, so as to appeal to foreign corporations

5.7 REGULATIONS AND GOVERNANCE FOR SUSTAINED GROWTH

As a regulatory agent for the country, the Qatari government is learning how to use global comparative advantage business models in order to encourage competition in the region. Indeed, it is attempting to make customer service a major priority using Information Communication Technology (ICT) and e-commerce to bring capital back into the economy, thereby upgrading the transparency and efficiency standards throughout all public and private businesses in the country. The government is further attempting to launch new, environmentally friendly, cost-effective, and energy-efficient strategies in all its projects, so as to create better value for the local population. The Qatari government has also endeavoured to add value to society, in both the public and private sectors, by developing more effective social policies that achieve overall objectives and meet target deadlines.

The government of Qatar has been launching new initiatives and policies to redirect its efforts more towards globalisation in trade and in the expansion of the local economy. This type of rapid economic globalisation does, however, have consequences which may in turn have an impact on the Qatari economy and those nationals who depend on it for their jobs and livelihoods. The attraction of so many foreign investors to the region is often accompanied by the arrival of more skilled, qualified, and experienced employees that can potentially take away jobs from Qatari nationals. The key to the successful development of Qatar's economy is then to ensure that the local citizens retain their jobs during these globalisation efforts. Furthermore, the Qatari government has been investing in the development of its educational sector, by building new universities and job training centres to ensure that the future of the next generation of Qatari nationals is secure (Jackson, 2009: 1-9).

By integrating performance management and upgraded managerial salaries into these new initiatives, the Qatari government is increasing efficiency so as to attract more qualified senior managers. Stronger and more effective leadership is then being promoted throughout the government as a means to develop innovative solutions to the country's problems. Retaining qualified people to work in the government, instead of the private sector, will require inventive and coordinated business models. Indeed, various proficient international business models will help the Qatari government to

increase global business opportunities and integrate new technologies into all aspects of the country's organisations. Moreover, the Qatari government has attempted to become both more accountable and reliable as a source of local governance for resolving the issues that plague society, by means of comparative advantage business models, which focus on improving overall performance (Molavi, 2007: 1-5; Janardhan, 2009: 143-165). Such issues include the rentier mentality which may lead to unproductive activity in the economy but also corruption in the society. In particular patronage and clientilism can be considered as a 'plague' from which Qatar aims to get away through efficient business models and strong private sector.

The Qatari governance business model shows how policy development needs to be society-oriented, instead of project-based, in order to allow for improved communication, monitoring, and adjustments according to global benchmarked best practice standards and policies. The policy cycle indicates that the government's strategic objectives are in place to identify problems, gather evidence, assess various options, plan and budget, implement and monitor on-going progress, and to evaluate and adjust solutions as is needed. Communication and consultation between governmental personnel and agencies is essential for the overall success of all these projects (Carbaugh, 2008: 178-184).

To face the future governance challenges regarding the provision of qualifications and jobs for Qatari nationals, the development of the local infrastructure and economy, and the recovery from the global recession, the Qatari government is creating many new initiatives, policies, and regulations that will allow the country to capitalise on market opportunities. New laws and Qatarization strategies are being enforced to increase education and job skills training, thereby protecting Qatari nationals from losing their jobs to foreign workers. In addition, new regulations are being made to protect construction labourers so that they have better living and working conditions, and higher wages. Integrating ICT, e-commerce, and Knowledge Management (KM) projects will also encourage greater efficiency in the government and local business.

The Qatari government is similarly working with banks to develop financial policies that will strengthen transparency and accountability in the financial and construction sectors, as there is a need to enhance the current regulations so that they will be

enforceable by local governments and will adhere to international accounting and financial standards. These new laws will also have guidelines promoting ethical business standards and integrity in the financial markets.

Qatar's urban planning and public transportation strategies now focus on becoming more energy efficient, supporting the reduction of global warming. This requires the Qatari government and native companies to make an effort in order to minimise their energy usage, create efficiency strategies, and to adapt to the changing global environmental regulations. Conserving energy and avoiding the negative effects of global warming have become some of the major concerns for many people within the Qatari government and among architectural designers and city planners, especially with regard to the design of new public transportation methods (Carbaugh, 2008: 178-184).

There are many positive effects of Qatar's expansion throughout the region, including allowing other GCC countries to develop their individual economies by increasing globalisation and trade with them. Qatar's expansion also allows for more opportunities for employment and for higher standards of living. People expect that their standard of living will improve as their financial position increases, and that this will then give them more money to purchase houses, cars, and other material items. According to Stoneman, 'In 1985, the Qatari government's spending on housing stood at 20.1% of the total government expenditure. By 1993 this had climbed to almost 30%. There has been a noticeable improvement in the overall standards of housing within Qatar' (Stoneman, 2009: 83-99).

The role of the Qatari government in relation to expansion is to evaluate and develop foreign corporate partnerships with international economies in order to maximise its financial situation for the future. Although Qatar's oil and natural gas industry is one of the most profitable markets in the world, new, cleaner energies will eventually be developed and that development will inevitably necessitate diversification into non-oil sectors as the key to job provision for Qatar's posterity. The government of Qatar has been developing many new free trade areas that provide tax-free trade and no tariffs on imports and exports for Qatar investors. These free zones have been created to

increase Qatar's revenues, preserve its markets, and to allow for more interregional commerce (Jackson, 2009: 1-9).

5.8 QATARISATION POLICIES FOR A KBE

In Qatar, as in other emerging nations, there are many foreign expatriates who have entered the workforce; here, these people have much higher qualifications and better work experience than the local Qatari residents. The emergence of the oil and natural gas sector in Qatar, and the subsequent wealth that it generated, has enabled the Qatari government to launch a new expansion and growth plan, using petroleum capital resources in order to fund new real estate and infrastructure development projects. This expansion has, however, brought on the effects of globalisation and the accompanying objective of sustaining the development of the economy. Such an endeavour focuses on attracting many foreign employees with considerable training and qualifications, and who also specialise in management, business and finance, engineering, architecture, ICT, or other fundamental sectors. During the later years of developmentalism, this expansion has presented a major problem for young Qatari nationals. For example, even those university-educated Qatari graduates with similar degrees to the aforementioned fundamental sectors were excluded from the labour market, because they could not compete with global employees who have more work experience and ICT training.

Due to the small number of Qatari nationals in the workforce, the Qatari government department of Labour and Social Affairs has recently made Qatarization its top priority. Indeed, it has been successful in increasing the number of Qataris in the banking and telecommunications sectors, and in other finance-related industries. One of the biggest problems with Qatarization is that Qatari nationals prefer working in the public sector, since they receive higher salaries with job security, better benefits, and shorter working hours. Yet this situation creates a rentier economy, as the public sector grows without any economic rationale or efficiency. If, however, the program is to work, many Qataris will also have to enter the private sector to help Qatar regain its hold on the workforce society (Peterson, 2011: 1-5; Hamad, 2010: 1-4).

By proposing quotas for how many Qatari nationals must be hired in local corporations, the government thus intends to increase the speed of the Qatarization

process. Further, the government's goals include a 15% Qatarization rate in the insurance industry (moving from the current 3%), and a 25% Qatarization rate in the banking industry, which is presently showing a mere 15%. The Qatari government's planning department realises how difficult it will be to enforce the proposed quotas, yet there has been a significant emphasis on getting more Qataris to attain academic qualifications, computer skills, and the training and experience that they need to acquire managerial positions in the future. Without these technological changes, the Qatari economy would never have been able to expand as fast as it did (Bowman, 2008: 1-5; Martin, 2010: 1-3; Hartsig, 2010: 1-5).

Qatar needed to upgrade its higher education facilities and add government programs such as Qatarization (which forces companies to hire a certain percentage of local residents each year), so as to give nationals more opportunities to get good jobs. Qatarization also allows Qatari nationals to attain key management positions in major corporations, but this possibility pivots on the requirement that they have appropriate university degrees and work experience. Those Qatari nationals who are educated and experienced are expected to contribute to the development and improvement of their fellow citizens as part of these endogenous growth models. This arrangement has consequently created a more qualified generation of Qatari nationals, who are better prepared to face the future of globalisation in Qatar. Preparing the younger generation has become a crucial role for the Qatari government with regard to the country's future economy, but it has also given more people the opportunity to succeed within their own country.

Due to the changing nature of the economy, there is now much greater pressure on the younger generation to acquire a university education and computer training in preparation for the job world. The establishment of a quota as part of the Qatarization policies for those educated and experienced Qatari nationals in need of jobs has also inspired many others to improve their level of education and training. This in turn has created a more qualified generation of native Arabs that will be better equipped to face the future economic challenges, which will arise from the continuous expansion and globalisation of Qatar.

Although Qatari nationals have been successful at a higher educational level, this very success has been one of the main reasons for the loss of cultural values among the local Qatari population. For there has been a lack of traditional customs and cultural values within the more westernised Qataris; indeed, these values have vanished with education and modernisation. The foreign expatriate influences of westernised values and belief systems have recently affected many Qatari nationals who now prefer modernisation to the traditional norms. As a result, the Qatari government has launched many cultural awareness programs to help preserve the national and cultural identity of the local people (Ahmed, 2010: 1-3; Bowman, 2000: 1-5).

Given the necessity of the effective education and training of Qatari nationals, coupled with the need for economic diversification to create a sustainable economy and society, Qatar must become a KBE; it should therefore rigorously commit itself to policies developed for this very end.

5.9 ASSESSING THE KBE NATURE OF QATAR: A PRELIMINARY EVALUATION

After discussing the various aspects of the economic trajectories of Qatar, this section aims to provide a descriptive understanding of the KBE initiatives and developments in the country by referring to the following: Research and Development (R&D) expenditures and R&D related institutions in Qatar; education and education expenditures in Qatar; Qatari universities and their R&D activities; developments within intellectual property (IP) in Qatar; the GCC Patent Office and Qatar; Qatari trademarks and copyrights; innovation capacity and innovation in Qatar; and finally, the GCC and funding innovation in Qatar. Each of these areas is considered to be an essential aspect of Qatar's transformation into a KBE. This section will primarily present descriptions of these areas, whereas the following empirical chapters will provide more analytical observations.

5.9.1 The State of R&D Expenditures

The Qatari government plans to invest QR4.6 billion in R&D by 2015, which is almost 3.2% of its GDP, namely QR146 billion. This implies that on average QR 920 million will be annually allocated to R&D activities, with the objective of

transforming Qatar into a KBE (Williams, 2010: 1-7). With a current population of 850,000 people, this figure translates to the Qatari government investing a *per capita* gross expenditure on R&D of about QR5,411 per person (Hussein, 2010: 1-7).

In comparison, and according to the Arab News, the GCC GDP is nine hundred and eighty-three billion for 2011 and the R&D budget in the GCC is approximately 3% of the entire GDP, which thus comes to a total of QR28 billion (Waterson, 2011: 1-6). Although the GCC region has for the most part realised the importance of R&D, the Qatari government has begun to invest heavily in this area during recent years, (when compared to other countries). A distinguishing factor in Qatar's position is that it has opted for institutionalisation as an important method of providing a structural approach to R&D, and therefore to a KBE.

It should also be stated that Qatar's decision to invest almost 3% of its GDP illustrates its commitment to the advancement of its society with regard to innovation, technology, and IP research. The percentages of GDP invested into research by the USA, France, and the UK at 2.7%, 2.2%, and 1.8%, respectively, indicating that Qatar is the leader of technology-driven KBEs on a global scale for IP research funding.

5.9.2 R&D Institutions in Qatar

There are three main governmental research and science centres located within Education City in Qatar. These centres fund numerous public and private research projects in collaboration with local and global companies, including:

(i) RAND-Qatar Policy Institute (RQPI), which focuses on the implementation and resolution of complex governmental and business policy problems throughout South Asia, the Middle East, and North Africa;

(ii) Qatar Science & Technology Park (QSTP), a laboratory and office with sophisticated technology to support the development of the KBE in Qatar by aiding international corporations commercialise and develop new technologies in this location; it also provides assistance for entrepreneurs launching new startup businesses related to technology;

(iii) Qatar National Research Fund (QNRF), which was started in 2006 to fund local and international research with local implications. It is an investment fund for Qatari research programs to give student and professional researchers opportunities within both the public and private sectors (Aydin, 2010: 1-7).

A breakdown of the many research partnerships within these main research institutes includes: the Qatar Foundation for Education, Science and Research on Community Development. Under these various partnerships the following institutions can be located:

(i) Carnegie Mellon University in Qatar (CMUQ);
(ii) Georgetown University School of Foreign Service in Qatar (GUSFSQ).

The following international and regional R&D related institutions can be listed as operating in Qatar:

(i) Qatar Biomedical Research Institute;
(ii) Qatar Computing Research Institute;
(iii) Qatar Environment and Energy Research Institute;
(iv) RQPI Studies;
(v) Texas A and M University at Qatar (TAMUQ);
(vi) The Qatar Faculty of Islamic Studies (QFIS);
(vii) Weill Cornell Medical College in Qatar (WCMCQ).

Furthermore, Qatar Science and Technology Park houses the following institutions that contribute to R&D activities in Qatar:

(i) AES International Consultants;
(ii) Amuser Barwa and Qatari Diar Research Institute;
(iii) Chevron;
(iv) Cisco;
(v) ConocoPhillips;
(vi) deltaDOT-QSTP LLC;
(vii) EADS;
(viii) Engineering Solutions;
(ix) ExxonMobil;
(x) Fuego Digital Media;
(xi) GE;
(xii) GreenGulf;
(xiii) Gulf Bridge International;

(xiv) Hydro;
(xv) iHorizons;
(xvi) Institut de Soudure;
(xvii) Maersk Oil;
(xviii) Meeza;
(xix) Microsoft;
(xx) Qatar Petroleum;
(xxi) Qatar Robotic Surgery Centre (QRSC);
(xxii) Qatar University Wireless Center;
(xxiii) QNEXUS;
(xxiv) Rolls-Royce;
(xxv) Shell;
(xxvi) Tata;
(xxvii) Total;
(xxviii)TRL;
(xxix) VHB;
(xxx) Williams F1.

Qatar University is another similar hub and contains the following research centres:

(i) Environmental Studies Center;
(ii) Materials Technology Unit;
(iii) Qatar University Gas Processing Center;
(iv) Qatar University Social & Economic Survey Research Institute (SESRI).

Qatar has also sought to develop research in medicine, thereby developing both the health services and the health sector. The following medical research centres can be mentioned as actively working within R&D:

(i) Hamad Medical Corporation (HMC);
(ii) Sidra Medical and Research Center.

In order to support the current R&D activities with the objective of developing Qatar into a KBE, the following government and private research centres are also actively working in R&D:

(i) Brookings Doha Center;
(ii) Gulf Organization for Industrial Consulting (GOIC);
(iii) Ministry of Environment;
(iv) Qatar International Academy for Security Studies (QIASS);
(v) Qatar National Research Fund (QNRF);

(vi) The BARWA & Qatari Diar Research Institute (BQDRI) (Granger, 2011: 1-8).

5.9.3 Education and Education Expenditures in Qatar

Qatar is considered to have some of the most highly qualified educational facilities in the world and it draws on a wide selection of renowned foreign academic institutions from the USA and the UK. According to the World Bank, Qatar's education expenditures for its present operating costs and salaries, excluding capital investments for equipment, machinery, and buildings, are QR170 million for 2011.

In addition to its many universities, Education City also has several special facilities that help younger children to improve their early education, including:

(i) Qatar Academy (QA), which provides children with international educational programs from preschool to a university level; QA is fully accredited by the New England Association of Schools and Colleges in the USA and by the Council of International Schools in Europe;

(ii) The Learning Center, a special school for students with academic problems and who need individual learning programs for the development of their compensatory skills;

(iii) The Academic Bridge Program, an academy started in 2001 offering college preparatory programs for exceptional high school students wanting university degrees from global universities or Education City universities (Granger, 2011: 1-17; Asquith, 2010: 1-5).

5.9.4 Universities and Their R&D Activities

Most of Qatar's academic institutions are government-owned, which means that they do the majority of their research partnerships with the Qatar Foundation (QF) and the QSTP foundations. Further, there are many R&D activities taking place at Qatari universities. For example, CMUQ is currently undertaking a major research project on innovation and entrepreneurship in order to provide partnerships with its Tepper School of Business; QSTP's best technology-based firms are similarly collaborating with Qatar University. The QF has also launched the World Innovative Summit for

Education (WISE) awards for promoting cutting-edge educational initiatives and for acknowledging outstanding innovation in education, based upon ongoing research projects in local universities. Many native Qatari students are taking part in oil, natural gas, and aluminum research studies that are related to the concepts of environmental awareness and protection.

'QSTP will create a research culture that is the next logical step after a good education system, one that is built with highly educated and committed teachers and those who are involved in research. It will bring excitement to the minds of young students who will see a bright future within the country in the field of science, without the hang-ups many youngsters have of becoming bankers or lawyers. We will also try to lay foundations for new industries, whether we do it ourselves or whether we pave the way for others to do it', stated the executive chairman of QSTP, Dr. Tidu Maini (Maini, 2011: 1-9).

The following list documents the number of universities operating in Qatar, all of which are research pro-active:

(i) ASPIRE;
(ii) Al Jazeera Academy;
(iii) Al Furqan School;
(iv) American School of Doha;
(v) CMUQ;
(vi) College of Arts and Sciences, Qatar University;
(vii) College of Business and Economics;
(viii) College of Education, Qatar University;
(ix) College of Engineering, Qatar University;
(x) College of Law;
(xi) College of the North Atlantic, Qatar;
(xii) College of Sharia;
(xiii) Doha Academy;
(xiv) Doha College;
(xv) Georgetown University in Qatar;
(xvi) Gulf English School;
(xvii) HMC;
(xviii) HMC, Ministry of Education;
(xix) Ideal Indian School;
(xx) M.E.S. Indian School;
(xxi) Mechanical Engineering, TAMUQ;
(xxii) Michael E. DeBakey High School for Health Professions at Qatar;
(xxiii) Northwestern University in Qatar;
(xxiv) QA;

(xxv) Qatar Aeronautical College;
(xxvi) Qatar Central Bank;
(xxvii) QF;
(xxviii) Qatar International School;
(xxix) Qatar Leadership Academy;
(xxx) Qatar National Research Fund;
(xxxi) Qatar University — Wireless Innovation Center for Capacity Building;
(xxxii) School of Foreign Service in Qatar, Georgetown University, Qatar;
(xxxiii) Shafallah Medical Genetics Center;
(xxxiv) Shaqab Institute for Girls;
(xxxv) Sidra Medical and Research Center;
(xxxvi) Supreme Education Council;
(xxxvii) TAMUQ;
(xxxviii)The Cambridge School Doha;
(xxxix) Qatar University;
(xl) Virginia Commonwealth University in Qatar;
(xli) WCMCQ (Crawford, 2010: 1-9).

As an aspect of the innovation and development at universities within Qatar, the publishing of academic papers in international journals is of great important. With regard to this notion, it should be mentioned that Qatar has begun to make its research public by such aforementioned means. In 2010, there were over 300 published papers from Qatari professors working in academic institutions. There are also many more papers being prepared as new projects continue to be launched in the country, by both local and international research institutes and universities.

5.9.5 Developments in Intellectual Property in Qatar

There have been many developments affecting IP in Qatar recently, with the government having doubled its investment into all R&D related to IP. The government is also bidding to gain more Intellectual Property Rights (IPR) so that it can promote the commercialisation of all its research. This bid will further support the overall advancement of knowledge and education, alongside the development of research for IPR on international, regional, and national levels. These research grants can similarly offer financial assistance to different global researchers for both the public and private sectors, as well as within academia. Indeed, this proposal is being pursued to facilitate these types of multiple partnerships between governments, universities, and corporations, both in and out of Qatar. This program will focus on research grants for technological advancement and for the fields assigned to health,

medicine, engineering, and science, so as to offer benefits for Qatari nationals and the rest of the world.

As a member of the QF for Education, Science, and Community Development, the Qatar National Research Fund (QNRF) celebrated its second annual National Priorities Research Program in 2010, which will provide research grants for the next three years, of amounts approximately totaling QR20,000-350,000 per project each year. The total grant value used to be QR25,000, but the Qatari government almost doubled this value to over QR45,000 for research grants in these particular fields. Selected universities from the UK and the USA are also involved in this program, researching specific fields that are essential to Qatar's development of a sustainable KBE. In support of this action, the president of the QF, Mohammad Fathy Saoud, stated that "This type of activity is an excellent way of raising Qatar's profile in the international academic community. It is fully in keeping with the Qatar Foundation's drive to build a knowledge-based society and make Doha the intellectual capital of the region" (Granger, 2011: 1-4).

According to the former president of Mubarak City Scientific Research and Technology, Hassan Moawad Abdel Al (Granger, 2011: 1-4):

> This fund is a good step towards developing more indigenous research and development, leading to the creation of more IPR, which will in turn promote technology transfer. This transfer of technology will include joint ventures, the disclosure of results originating from funded projects, the licensing or assignment of IPR related to such results, and the exchange of information, education, and training. The availability of IPR protection in Qatar through the 2002 trademark and copyright laws and through the 2006 patent law (which allow the registration of inventions, inventive designs, industrial models, and original computer programs), will provide the right IP environment for the new fund to promote projects for encouraging innovation and creativity, leading to the advancement of knowledge for technological developments.

According to the yearly Global Information Technology Report (sponsored by INSEAD and the World Economic Forum), Qatar now ranks 32 in the world because of the government's Supreme Council of Information Communication Technology, which has integrated an innovative ICT national plan and infrastructure, alongside education and healthcare initiatives.

Qatar is a member of several major global organisations: the World Trade Organization (WTO); the GCT; the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS); the World Intellectual Property Organization WIPO Convention; and, the Berne and Paris Conventions. All Qatari IP matters are administered by the Industrial Property Office, which is under the supervision of the Ministry of Economy and Commerce. QF, QNRF, and QSTP are currently assessing the future potential of IP research projects for Qatar as part of its transformation from a carbon-based economy to a KBE through the advancement of human potential and intellectual capital. This joint project will involve the lead principle investigators from over 266 National Priority Research Program studies identifying practical applications for research teams to address with their most innovative ideas. QSTP also handles its own research projects, which provide future entrepreneurs in education and business with the resources and skills that they require for technology-based and innovation-led corporate ventures. Over 33 nations have provided half of these 620 researchers; the other half is based in Qatar (Jassim, 2011).

QSTP already supports one hundred research project partnerships, 41 company memberships, and 914 employees as a means to address the overall technological needs of Qatar. They have developed a Technology Innovation and Entrepreneurship Program and they have also created a platform for startup firms and various research projects. The Managing Director of QSTP, Roberts, stated that (Jassim, 2011: 1-6):

> We believe intellectual property management is a core capability in developing Qatar's knowledge economy and have built professional in-house capacity through our own applied research and innovation projects. We look forward to leveraging our intellectual property capabilities through our collaboration with Qatar National Research Fund to help translate the results of their funded research into innovations and further develop an intellectual property infrastructure in Qatar..

Abdulla Ahmed Qayed, the Director of the Intellectual Property Protection Center, is working with the WIPO to sponsor a Trainers Program on Effective Intellectual Property Asset Management for Small and Medium Enterprises (SMEs). The government is also encouraging these IP elements, which are related to Qatar's KM IP strategies for the sustainable economic development of its KBE. These strategies include the following:

(i) KM as social capital for university students to trade and use as a commodity in order to increase their employment and business opportunities in various fields;

(ii) Organisations must integrate KM to adapt to changing university environments and to compete in the Qatari business workforce;

(iii) Employees made into knowledge workers will be more likely to adopt various job skills that can be transferred between jobs;

(iv) Future KM will transform into new phases such as Knowledge Process Reengineering (KPR), where knowledge-intensive business policies and processes are redesigned to gain more insight into how to add value to them (Crawford, 2010: 1-5; Lewin, 2008: 41-56).

5.9.6 The GCC Patent Office and Qatar

The GCC was founded over thirty years ago in 1981 from all the respective nations of that geographical area. Correspondingly, the GCC Patent Office for the region was also established under the Supreme Council. The GCC Patent Office policies involve the coordination of intellectual property efforts and patent protection to enhance GCC regional projects for the purpose of technological advancement. Since the GCC countries account for one sixth of the international oil production and almost fifty percent of all the oil production for the Organization of the Petroleum Exporting Countries (OPEC), they thus have the financial resources to invest in R&D related to intellectual property protection (Sawahel, 2008, 1-15). Qatar is, moreover, a member of the GCC Patent Cooperation Treaty (PCT). Other regional intellectual property organisations also include the ARIPO and the OPAI.

Although Qatar does not have a national patent office, it is, however, currently one of the members of the Gulf Cooperation Treaty (GCT) and of the GCC Patent Office, which is located in Riyadh, Saudi Arabia. The GCC Patent Office provides legal protection for all patent grants from GCC countries, yet the only exception to this arrangement is that any patent infringement issues have to be handled domestically according to the laws of the GCC nation in question.

At present, there are no local patent laws within Qatar and the only enforcement of patent protection emerges through the publication of English and Arabic newspapers,

which state the punishment for anyone infringing on patent rights. These cautionary notices explain who the owner of the patent is and alert others to the possibility of litigation, if these patents are infringed upon. Cautionary notices are, however, not as effective in preventing infringement as governmental patent registrations, so Qatar, and the other GCC member states, must therefore implement stricter regulations in the future or face the possibility that global researchers and inventors may avoid new developments in their respective countries (Sawahel, 2008: 1-15).

5.9.7 Qatari Trademarks and Copyrights

Qatar's trademarks and copyrights have some intellectual property protection and legislation under Law 7 of 2002 for the Protection of Copyright and Related Rights, and under Law 9 for Trademarks, Geographical Indications, and Industrial Design Law. Qatar's intellectual property issues are handled by the Ministry of Economy and Commerce and the Industrial Property Office. It should be further noted that Qatar has been a member of the WIPO since 1976, a member of the Berne Convention (which deals with Literary and Artistic Works) since 2000, and finally, a member of the Paris Convention since 2000 (Sawahel, 2008: 1-15).

According to the Abu-Ghazaleh Intellectual Property (AGIP) patent and trademark law firm, Qatar's trademark protection is handled by Nice Agreement, which registers trademarks and oversees the International Classification of Goods and Services for the Purposes of the Registration of Marks. Any trademark opposition lawsuits are handled by the registrar or civil courts, if decisions must be appealed due to controversy. All Qatari trademark registrations are only valid for ten years, but they are also renewable for continuous ten year periods. All trademarks are published in the Official Gazette of Trademarks in Qatar. If any trademark remains unregistered for five years, it can be registered by another party through claims of non-use. Any unauthorised usage of registered trademarks is a criminal offense that is punishable with strict penalties under the Qatari Trademark Law, which was updated in 2002 (Sawahel, 2008: 1-15).

With regard to Qatar's copyright protection, the Qatari Copyright Law No. 25 was updated in 2002; copyright works can then be registered with the Qatar Copyright Protection Office. The Copyright Protection Office subsequently issues the implementing regulations for any submitted copyright works and sends a letter of

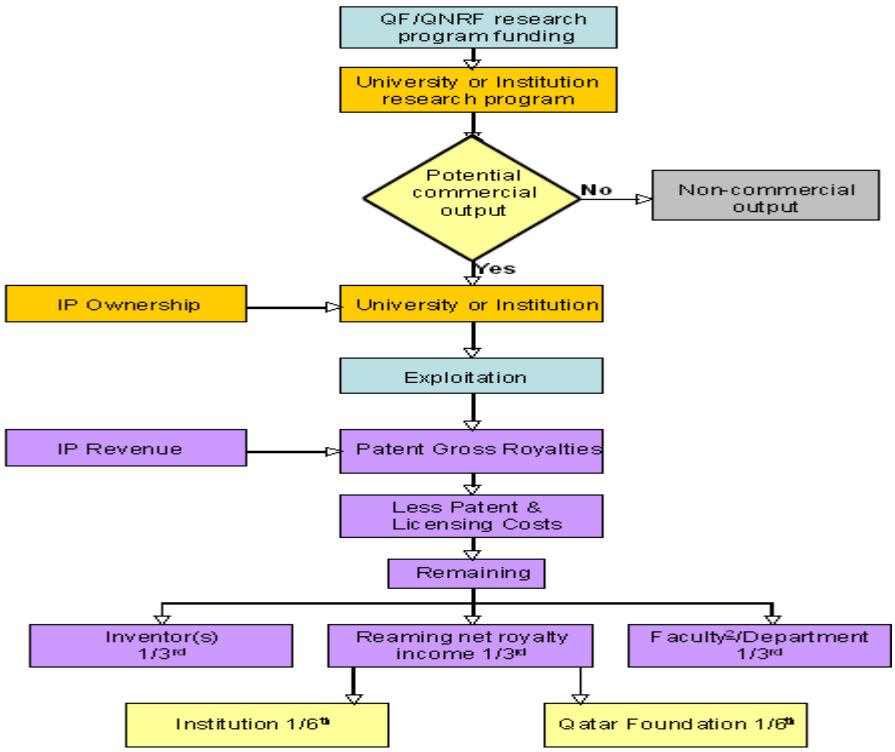
confirmation. Copyright protection is only granted to creators of original scientific, artistic, or literary works. All copyrighted material can be registered for ten years, with continuous ten year renewable extensions (Sawahel, 2008: 1-15).

It should be mentioned that although an attempt was made to establish the exact number of patents issued to Qatar as part of an evaluation of the country's knowledge development, there is no actual public record of this information, since it is a relatively new concept and not fully protected as it is in western nations.

In Qatar, the QNRF, Legal Counsel, and other various institutions handle the agreements relating to intellectual property research and protection for their research projects. Figure 5.6 depicts the process of approval, funding, and completion for intellectual property research projects (Sawahel, 2008: 1-15; Jassim, 2011: 1-5).

As is illustrated by Figure 5.6, Qatar has successfully laid down the infrastructure for innovation and development through its identification of the process by which intellectual property can be registered and thus protected.

Figure 5.6: QF/QNRF Research Program Funding Diagram



Source: QN Ownership and Royalty Distribution Policy (2011)

5.9.8 Innovation Capacity and Innovation in Qatar and the GCC

According to the IMF and the World Bank, Qatar's innovation capacity ranking was sixty-one out of one hundred and thirty in 2004, yet according to the Innovation for Development Report (2010-2011), Qatar has since totally transformed its economy over the past six years and it is now located in the forty-first position for innovation capacity, with a score of 55.9. In comparison, the UAE is ranked twenty-eighth with a score of 58.9. Qatar was ranked according to its capabilities for innovation in the following categories: the institutional environment; human capital; training and social inclusion; the regulatory and legal framework; R&D; and, in the use of ICT (Williams, 2010: 1-7).

Some of Qatar's most significant strengths related to innovation also include the following areas: good governance; country policy assessment; education; social inclusion and equity policies; doing business; R&D infrastructure; patents and trademarks; telephone communications; mobile communications; the Internet, computers, and television; government ICT usage; and, the quality of infrastructure. Qatar has also been ranked very highly when compared with the average scores of other nations in regard to the quality of public administration, fiscal balance and debt levels, and the cost of registering property. Qatar's weaknesses, where it ranked below average compared to other nations within their average income level, and which must ultimately be improved, are comprised of the following: internet subscribers; R&D worker density; the number of computers per one hundred people; gender equality; a tertiary enrolment rate; environmental sustainability; voice and accountability; and finally, inequality (Claros, 2011: 93).

Qatar's activities for the purpose of becoming a KBE are evident from its innovation policies; these have resulted in many successful projects that include a solar-paneled cover for the country's football stadiums, which will allow for the play of indoor games during the summer by using solar power to provide electricity and air conditioning. One of the most innovative new ICT developments that the Qatari government has recently launched is the Microsoft Enterprise Agreement Portal as part of a joint venture between ictQatar and Microsoft in order to provide assistance to the government agencies for managing their related software. Microsoft also went into

partnership with ITE in Dubai, which is one of the top regional ICT firms in the GCC, so as to distribute software throughout Qatar.

Global networking leader Cisco Systems further partnered with QF to establish a research facility in QSTP for their Project iQ, which is an international platform for collaboration and business applications, such as unified messaging, social networking, TelePresence, wikis, and blogs. 'QSTP tenants can collaborate with top scientists, have access to facilities, and employ graduates from these universities. The universities have the opportunity to allow their students to work on real world projects. QSTP provides a unique facility where a cluster of the world's top companies will be working under one roof and conducting research on important issues. I am not aware of any other place in the world where that is happening', stated Dr. Samer Adham from ConocoPhillips (Maini, 2011: 1-9).

Some of the global KM innovation practices Qatar now integrates are as follows:

(i) Incorporating KM into business management techniques;

(ii) Educational learning programs that will use knowledge and job skills expertise to prepare people thoroughly for future positions in Qatar;

(iii) Developing a knowledge workforce requires the coordination of educated and experienced design workers who will share knowledge and information with each other, and who will teach this information to those without it;

(iv) Universal access to knowledge from global knowledge sharing between countries and students will foster an environment of continuous learning in Qatar, with both individual and group participation as the cornerstone of the development of the knowledge society (Kogut, 2008: 203-215).

It should be noted that according to the 2011 Global Innovation Index (GII) and the INSEAD Business School, Qatar has the highest ranking at twenty-four, though the UAE is a close second with a score of twenty-six through its own innovation progress, infrastructure, human capacity, and technological sophistication. With all five of the GCC nations represented in the top thirty-five rankings, innovation and technological development has therefore been proven to be a major priority for the Gulf countries; for Kuwait was ranked thirtieth, Saudi Arabia thirty-second, Bahrain thirty-fourth,

and Oman at the fifty-second position. The USA was the highest ranked country from 2008-2009 in the GII, with Germany in second place for two years.

When reflecting on the innovation strategies displayed in the GCC region, the UAE has been considered to be the leader in innovation for the past decade, mainly due to the creative architectural designs in its construction projects. This creativity is illustrated by the Palm Islands, Ski Dubai (the world's first indoor ski hill), and the Atlantis Hotel with its underwater rooms where guests can see sharks, stingrays, and fish swimming. Abu Dhabi has, however, been focusing on taking over the new technologies and energy industries, whereas Qatar has been concentrating on innovation and research centres. The GCC countries invested over two hundred and fifty billion in construction development projects from 2003-2010, which totaled over 60% of their combined GDPs. All of the GCC countries are developing KBEs with a focus on the following areas: innovation; new technologies; alternative energies; green sustainable buildings; global education research partnerships; knowledge-based research project centres related to clean energies; environmental protection; water conservation; desalination practices and efficiency; and finally, SMART technologies (Waterson, 2011: 1-8).

The Abu Dhabi government's Mubadala Development Company has stimulated the GCC with many innovations related to high technologies and new energy research. Kuwait thus has a new Microsoft Innovation Center that partnered the government's National Technology Enterprises Company (NTEC) with Microsoft to collaborate on research projects linked to innovative software applications. Kuwait also developed energy conservation tactics for saving up to 85 air conditioning costs at their army camps by using innovations and new technologies. The country further partnered with Scotland to create the Kuwait/Scotland Health Innovation Network.

Saudi Arabia has correspondingly launched the following institutions: the King Abdullah University of Science and Technology (KAUST); the King Saud University, with a world-class innovation research centre; the Saudi Innovation, Diversification & Investment (SIDI) exhibition; the Global Research Partnership initiative; and, the almost finished King Abdullah Economic City project.

As for Bahrain, it has launched a Media Center, Cisco Innovation awards, and an Innovation Bahrain Conference. Oman has similarly launched a major array of beachfront resorts, hotels, and shopping centres. This emphasis on leisure is further complemented by the presence of the Innovation Fair Oman (INFOM) as a multinational exhibition event, the Oman Innovation and Support Center (ISC), Turnkey IT business solution providers, biometrics, and security projects (Waterson, 2011: 1-8).

There are numerous innovations being launched in the GCC that focus on technological advancement and innovation, including Abu Dhabi's US$40 billion Emirates Nuclear Energy Corporation (ENEC) nuclear power plant and their US$22 billion Masdar City solar energy project. Abu Dhabi has launched its Innovation City as a technological and academic centre for research, and where CERT, the Higher College of Technology Central Services Division, and the Men's College will be located. There will also be a Plaza of Intelligence and an Innovation City in Dubai; in Dubai Festival City, there will also be a Promotion and Innovation Center. Dubai further hosted the Dubai International Academic City with Hult International Business School Innovation Olympics Program (Waterson, 2011, 1-5).

5.9.9 Funding Innovation in Qatar

Qatar's funding innovation has many different global, corporate, and governmental sources that partner with their main research foundations, QF and QSTP, to develop new research. Most of the world's major oil companies are all involved in several different alternative energy research projects with these foundations and many Qatari universities, so as to develop cleaner energies and to help increase efficiency and environmental protection for oil and natural gas production. Shell, Chevron, Mobil, and Total are all partnering with Qatari universities and foundations to create new research projects. Chevron has just invested QR20 million for a joint venture grant and research project with QSTP called the Center for Sustainable Energy Efficiency that is intended to stimulate technological innovation within Qatar (Maini, 2011: 1-9).

ConocoPhillips launched a water management and conservation research project related to petroleum water cleanup for the post-production of oil refining operations. The managing director of ConocoPhillips Global Water Sustainability Centre

(GWSC) organises the operations based in Qatar. GWSC produces water for downstream and upstream operations, which thereby allows them to become a global business model for how continuous water conservation management strategies should be upheld. Since Qatar and most of the other GCC nations are mainly dependent upon desalination plants for their drinking water, water conservation research is then an essential part of the government's long-term strategic planning (Maini, 2011).

GWSC partnered with General Electric (GE) Water & Process Technology and has already filed for 2,200 patents in the GCC region, creating more cost-effective and efficient water treatment technology that will be useful in the oil industry. Some of the recommended uses for the post-treated petroleum water include industrial cooling, livestock watering, crop irrigation, and wildlife habitats. These suggestions will consequently provide more available drinking water for domestic usage. 'We produce and manage much more water than oil every day, but this water typically needs to be treated before it can be used as a commodity or disposed of, which can be very costly. Our goal here is to couple GE's cutting-edge technologies in chemicals, equipment, and advanced membranes with ConocoPhillips' industrial applications and test facilities to develop innovative solutions for our operations in the Middle East region and around the globe', stated Adham (Maini, 2011: 1-9).

The Qatari government has focused its technological innovation research projects on four main areas: ICT and telecommunications; the environment; health sciences; and, energy research. As reported by Maini (2011: 1-9), Adham declares that 'Within energy, we are looking at oil and gas research, particularly in terms of understanding their structure and maximising their long-term life. We are also looking at alternative fuels and environmentally friendly fuels akin to GTL, which Shell is working on. In the area of alternative fuels, we are focusing on solar power, since this is one of the most realistic of the renewable energies and makes sense with Qatar's abundant sunshine. With a global shortage in the supply of upstream raw materials for solar, this will be a major income generator for Qatar as well'.

EADS-CCQ is one of the leading international aerospace defense contractors; it has just established a Competence Center within the QSTP for facilitating the knowledge transfer of managerial expertise in this field. According to the general manager of

EADS-CCQ, Mohammed Al-Kuwari, the firm has been selected by the Qatar General Organization for Standard and Metrology (QGOSM) to improve government testing and research laboratories, so that they will reach the International Standards Organization (ISO) levels.

QSTP Proof of Concept Fund program has partnered with Fuego Digital Media QSTP to provide them with a QR500,000 research grant. Feugo QSTP is creating highly sophisticated Arabic eBusiness software and an interactive web content tool that is designed for the Middle East and North Africa (MENA) region. According to Fuego's general manager Kevin Higgins (Maini, 2011: 1-9):

> For these customers, the Fuego OnDemand Service will provide simple, internet-based and internet-hosted access to powerful communication, content, and collaboration capabilities, and it will also offer a platform for the development of an ever-expanding library of SME business applications, all in Arabic, French, and English. The key benefit will be a complete, multilingual, easy to implement, secure, and affordable solution that provides 100 of the software applications required by MENA SME businesses. QSTP is the perfect catalyst for growth, making world-class software development facilities and the opportunity to interact with other advanced technology companies engaged in R&D activities.

Other major research projects involving global partners include Qatar's iHorizons partnership with Germany's SAP AG and the Al Jazeera Network, providing business process automation, web content management, ICT consulting, and media streaming and localisation. iHorizons also opened up a research facility in QSTP; it is partnered with Qatar University, ictQatar, CMU, Sibaweih Center, and Al Khawarizmi Institute for innovation research related to Arabic language ICT software applications. Qatar's Meeza firm is similarly developing the M-Vault 1 as a sophisticated Tier 3 Data Center for the provision of Managed ICT Services and Solutions. According to Meeza Deputy CEO Hamad Al-Mannai, 'The M-Vault 1 offers security, availability, and scalability. It delivers 99.98% availability, which is the highest level of availability offered from any Data Centre in Qatar. Clients such as Vodafone and Masraf Al Rayan can exert leverage through our Data Centre to scale their business and benefit from the highest levels of physical security' (Maini, 2011: 1-9).

Qatar's most intriguing new innovative research centre is the SMARD biotechnology and medical research firm, which is developing such sophisticated technology as

clinical diagnostics and medical devices, alongside therapeutic approaches for the biotechnology and bioscience fields. According to SMARD CEO Tarek Zaazou, some of their most recent R&D projects include a Patient Data Management System that works with ERP SAP solutions, an Innovative Blood Filtration System that can be used for septicemia treatments, and a non-invasive Blood Glucose Measuring System that uses advanced molecular physics technology and which will eventually be miniaturised for use and production (Maini, 2011: 1-9).

TCE Optimum Designs in Qatar has focused on research and it has launched several alternative energy projects in QSTP for solar power, nanotechnology, and green building sustainability. As reported by Maini (2011: 1-9), the general manager of business development for TCE, Dr. Bomi Patel, emphasises that 'TCE designs will maximise the use of the renewable energy resources and the facilities that have been designed, taking into account locally available building materials produced with low energy consumption. They are developing a sustainable Green Building Design Software which will integrate all the systems (renewable energy use, optimised HVAC, lighting energy reduction, water conservation, and the use of waste for energy generation) to get the most suitable building design for local conditions in Qatar, thereby significantly reducing the overall energy consumption and emissions'.

QSTP has also been working with Qatar University Wireless Innovations Center (QUWIC) to develop collaborative efforts with many international partners. They will focus on providing a research and job skills training platform for ICT services, applications, telecommunications systems, wireless technologies, educational activities, and consulting services, so as to establish Qatar as a regional centre for telecommunications and wireless R&D. One of the most unique and future-oriented research facilities in QSTP is that of the Qatar Robotic Surgery Center (QRSC); this is a surgical training centre that has a telemonitoring suite, simulation operating theatre, and robotic surgical arms for performing operations. This facility will train fifty surgeons and eighty students from throughout the GCC region and abroad. The major activities that will be pursued by the QRSC include robotic surgery technological demonstrations, the R&D of future technological advancements, and the training and development of medical teams, doctors, surgeons, and nurses. There are only two other robotic facilities in the world and this is the first one based in the GCC.

The QRSC has already developed partnerships with many global robotic surgeries and hospitals to improve healthcare worldwide; these include Imperial College London and Qatar's own HMC. According to the manager of QRSC, Jan Nuyens, 'Robotic surgery is a relatively new technology. There is a lot of room for innovation and development. We want Qatar to play an important role in this field on an international level. We will do that through performing research at the centre, collaborating with important research centres worldwide, and by stimulating Qatar-based research with our local partner organisations. The presence of research departments from so many world-class organisations is exceptional. This gives QSTP a unique combination of professionalism and innovativeness that will attract many more technology-driven companies in the future. I am convinced that QSTP will be the motor of Qatar's future knowledge-based economy' (Maini, 2011: 1-9).

5.10 CONCLUSION

As is evidenced by the preceding discussion, Qatar has made important advances towards becoming a KBE: its economic growth and development trajectories, coupled with its internationalisation, demonstrate that it has successfully transformed its traditional economy and society into a modern and dynamic vision. Further, Qatar's investments and international collaborations for joint innovative R&D are commendable, both in terms of financing and via the positive consequences of such innovative projects. The country has successfully matched its ranking in wealth levels with knowledge development through its investment in universities and research centres, thereby creating an important hub of a KBE.

Indeed, there seem to be few remaining hurdles facing Qatar's future innovation, since it possesses the financial means, global partnerships, and the necessary governmental support. Such support enforces continuous investment into technological innovation and research. Alongside this emphasis, Qatar also has a stable economy and it can offer a collaborative research environment in QTSP, where new technologies, experienced foreign researchers, and young educated Qatari nationals are all interrelated by a desire to improve the world, to develop efficient new innovations, and to protect the natural environment (Pollard, 2010: 1-5).

The Qatari government has published the Qatar National Vision 2030, which provides a valuable insight into what the country will be focusing on over the next twenty years. Thus, the government of Qatar is concentrating on motivating sustainable economic development with regard to its long-term objective of creating a KBE (Granger, 2011: 1-16).

It can therefore be concluded that Qatar's efforts to become a KBE have been successful, producing a positive outcome so far. Chapter 6 presents an analytical method in its assessment of Qatar's position with regard to its status as a KBE, whereas this chapter offers a descriptive preliminary discussion. In addition, Chapters 7 and 8 both provide analysis based on the micro aspects of this situation in terms of the levels of understanding demonstrated by Qatari university students towards knowledge and a KBE, and through their assessment of Qatar's strategies for transforming into a KBE.

CHAPTER 6

ASSESSING THE READINESS OF QATAR FOR ITS TRANSFORMATION INTO A KNOWLEDGE-BASED ECONOMY THROUGH THE KAM METHOD: ANALYSING THE CURRENT POSITION AND THE CHALLENGES AHEAD

6.1. INTRODUCTION

The last three decades have witnessed a significant expansion of global economic activities and the growth of emerging markets during this process. Indeed, global economic activities and trade have moved away from their traditional locations in North America and Western Europe, and they have spread out around the world. Countries possessing important natural resources and commodities have gained a valuable advantage by achieving strong economic performances. Qataris correspondingly a perfect example of a resource-rich country; it has experienced a growth of annual GDP from $8 billion in 1995 to $52 billion in 2012 (Qatar Investment Authority, 2012). This considerable growth in Annual GDP, coupled with strong annual growth estimates between 7% and 10% (Qatar Investment Authority, 2012), clearly demonstrates that Qatar, with its key natural resources, is going to be a substantial economic power on a global scale.

Economic literature and history also suggest, however, that countries furnished with rich natural resources and whose economic activities are focused on producing and selling one commodity or a limited number of products are prone to what is described as a 'Resource Curse' (Humphreys *et al.,* 2007). Countries that wield a strong supply of natural resources and enjoy the resultant economic wealth are consequently expected to become vulnerable to macroeconomic weaknesses over time; if this vulnerability to macroeconomic weaknesses is not properly managed the country in question faces long-term negative effects. To counter this situation, such a country

should first develop a long-term growth and development strategy; it should then diversify its economy and income between various sectors and investments.

Perceiving the threat of this 'Resource Curse' scenario, Qatar has taken the necessary steps to protect itself economically. By establishing the Qatar Investment Authority, the country has developed a long-term investment strategy and pooled its natural resource revenues in order to fund this plan. As a result, the Qatar Investment Authority has announced that an amount of around $130 billion is required to finance the country's infrastructure, education system, health facilities, and modern hydrocarbon operations (Qatar Investment Authority, 2012). Qatar has further announced its intention to open its economy and provide competitive economic conditions so as to encourage private enterprise and the promotion of Foreign Direct Investment (FDI); these conditions include the establishment of economic stability and the rule of law. From these strategic endeavours it has become clear that Qatar intends to develop a Knowledge-Based Economy (KBE) in order to diversify its economic activities and enrich its human capital, in addition to improving its global competitiveness on an economic level. These efforts seem to have been successful given Qatar's position in the Global Competitiveness Index (WEF, 2012), yet this move to establish a KBE in Qatar should be contextualised and examined within a broader perspective, which should include: creation of knowledge; its application in entrepreneurship and innovation, research and development, and in product design; and also as to how people use their education and skills.

A KBE is not only interested in how knowledge is created, but how it is transformed into innovations and used efficiently for economic growth, development, and prosperity. This paper therefore aims to offer a thorough analysis of the current situation and will be structured as follows: Section 6.2 will provide a broad macroeconomic overview of Qatar; Section 6.3 will commence with a wide-ranging examination of Qatar's economic readiness for becoming a KBE, it will then continue with an evaluation of the Information and Communication Technology (ICT) infrastructure of Qatar. These sections will be followed by a study of the suitability of the economic innovations proposed by Qatar, discussing whether these innovations are reflected on the performance of the broader economy. The final element of this section will focus on the development of human capital, placing special emphasis on

the role of education. Section 6.4 will discuss the issues highlighted, evaluating the challenges ahead and their implications on policy. Section 5 will conclude the paper with a brief summary that addresses the findings of this research.

It should be noted that all the data presented in this chapter through various tables, and the charts and figures developed through the KAM method.

6.2. BACKGROUND

In the wake of the global financial crisis, Qatar has weathered the storm with relative ease, for according to the IMF (2012), Qatar, although affected by the political turmoil in the surrounding region, continues to have a strong economy due to its relatively small population and great wealth. Indeed, as discussed in Chapter 3, since 2006, its nominal GDP has almost grown by five fold. As can be seen in Table 6.2., the real GDP has grown by 16.3% in 2010 to 20% in 2011 (The Report- Qatar 2011); the driving force behind this acceleration will be the increase in the production of LNG by 36% in 2011. The IMF estimates indicate that 10% of the 19% of real GDP increase will be caused by the LNG exports alone; the remaining 9% of real GDP growth will come from the contribution of the increased activity in manufacturing, financial services, trade, and tourism. . This strong economic growth, combined with the relatively small Qatari population, guarantees that the official unemployment rate will remain below the 1% level.

Correspondingly, the inflation levels have been under control since 2008 (where it stood at 15.1%) and have decreased to -2.4% in 2010 because of the contracting global economic conditions; these inflation levels were balanced at 3% in 2011. The 2006 - 2011 average is at 5.9%, thereby suggesting that Qatar has been safe from inflationist pressures throughout this period.

The overall fiscal balance (net lending/borrowing) has also been stable between 2006 and 2011 with a surplus of 7.9% on average. Although the data for 2011 show a significant decline to 2.7%, this decrease is mainly the result of lower profit transfers from Qatar Petroleum (QP) to the general budget because of the capital increase of the company. If this transfer had been completed as normal without any capital increase

in QP, the IMF estimates that the surplus would have been around 7.2%, increasing the average to 8.8%.

The current account surplus was at 28% in 2011 with an increase of 2% from the 26% surplus of 2010. This number is consistent with the 2006-2010 average of 23.2% and it proves that Qatar is a strong country economically. It should, however, be noted that the principal factor attributed to these surplus values is that of the increase in the volume and international prices of hydrocarbon exports.

Qatar's financial system also enables the provision of significant results with the help of government policies, the easing of monetary conditions, equity injections, and with asset purchases by government agencies. The Qatar Investment Authority (QIA) has injected $2.8 billion into the banking system in three trenches between 2009 and 2011 (IMF, 2012). As a result of this action, the capital adequacy ratio of the banking sector increased to 22.3% by the end of June 2011. The average return on assets stood at 2.7%; the non-performing loans ratio was 2.3% at the end of June 2011. The exposure of local banks to European banks is similarly limited, constituting only 2% of the Qatar banking system's total assets.

Table 6.1: An Overview of the Economy of Qatar

	2006	**2010**	**2006-2010 Average**
Real GDP Growth (%)	18.6	16.3	18.1
Inflation (%)	11.8	-2.4	6.7
Current Account Balance (US$ billions)	15.3	33.5	22.4
Current Account Balance (% GDP)	25.1	26.3	23.2
Fiscal Balance (% GDP)	7.9	2.7	9.0

Source: Country Authorities and the IMF (2012) & The Report-Qatar 2011 (p.38).

Such weighty economic indicators, including growing hydrocarbon exports and continuous government support, have ensured that Qatar is one of the most financially competitive countries in the world, with a constant place in recent years amongst the upper ranks of those countries with a high Global Competitiveness Index. Indeed, as is thus illustrated by Table 6.2 (Global Competitiveness Index), Qatar is the only

Middle Eastern country and member of the Gulf Cooperation Council (GCC) and of the Organisation of the Islamic Conference (OIC) to be situated within the top twenty places of the Global Competitiveness Index.

Table 6.2: Global Competitiveness Index

	GCI 2012-2013		GCI 2011-2012	
Country/Economy	**Rank**	**Score**	**Rank**	**Change**
Switzerland	1	5.72	1	0
Singapore	2	5.67	2	0
Finland	3	5.55	4	1
Sweden	4	5.53	3	-1
Netherlands	5	5.50	7	2
Germany	6	5.48	6	0
United States	7	5.47	5	-2
United Kingdom	8	5.45	10	2
Hong Kong SAR	9	5.41	11	2
Japan	10	5.40	9	-1
Qatar	11	5.38	14	3
Denmark	12	5.29	8	-4
Taiwan, China	13	5.28	13	0
Canada	14	5.27	12	-2
Norway	15	5.27	16	1
Austria	16	5.22	19	3

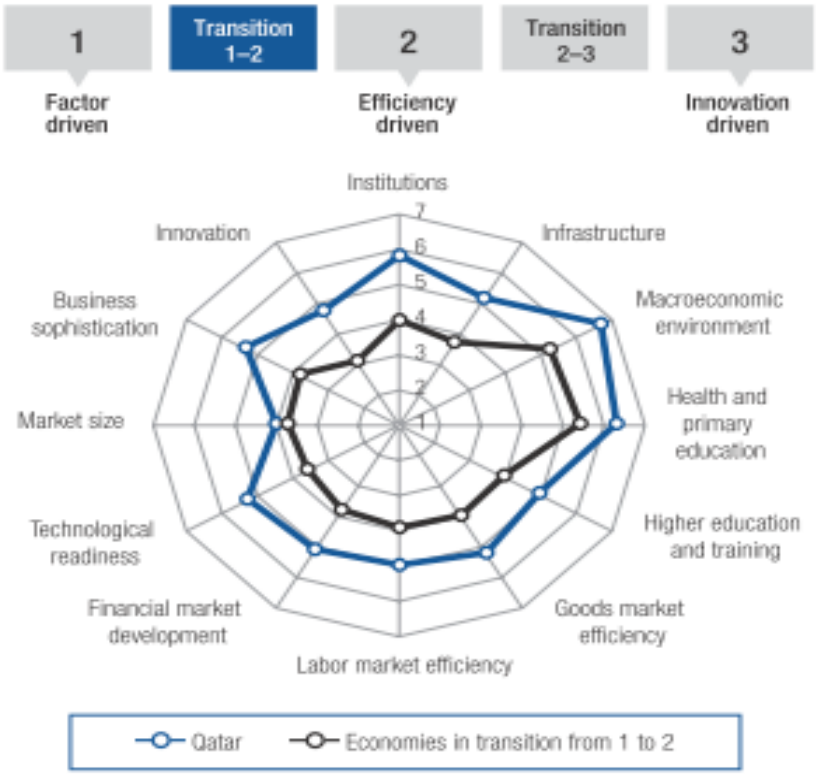
Source: The World Economic Forum, Global Competitiveness Index (2012)

Qatar achieved eleventh place in the GCI in 2012, improving on its position at fourteenth place in 2011. This improvement is, moreover, not merely coincidental or unique, since Qatar has been constantly improving its position in the GCI over the last three years. For comparison, it was placed at the twenty-second position in 2009 and at the seventeenth ranking in 2010. There is then a significant, demonstrable, and continuous improvement to be discerned in Qatar's competitive abilities due to the strategy and commitment of the Qatari government.

The GCI report does, however, indicate some problematic areas in the economy of Qatar and these should be addressed if Qatar intends to operate as a KBE in the long-term. Looking at the sub-indexes of the GCI report (WEF, 2012), it is apparent that Qatar's rank of eleventh place is mainly attributable to its efforts in terms of opening the economy and providing the necessary infrastructure for investment and trade.

These efforts are further illustrated by Qatar's position at seventh place in the sub-index for Basic Requirements. The two additional KBE related sub-indexes suggest, however, a more negative image, for Qatar's situation at fifteenth place in the Innovation and Sophistication Factors sub-index implies that its level of competitiveness is a result of providing the outset, but not the innovative, nature of the economy. Qatar is also located at the twenty-second rank in the Efficiency Enhancers sub-index, which insinuates that despite the decreased position of Innovation and Sophistication Factors, the country is failing to direct these into economic efficiency and productivity.

Figure 6.1: The Stages of Qatar's Economic Development



Source: The World Economic Forum, Global Competitiveness Index (2012)

Qatar, as discussed previously, has achieved success in macroeconomic indicators during recent years: it has strong and continuous economic growth, a low level of unemployment, low inflation rates, secure fiscal balance, and a considerable current account surplus. A further level of success has been evidenced through the opening Qatar's economy and its transformation into a globally competitive country; both of

these accomplishments can be linked to the aforementioned long-term growth and development strategy. And yet this transformation of Qatar into a KBE does not offer a completely positive approach to the future. According to the Global Competiveness Report (WEF, 2012), Qatar is still perceived as a transition economy, moving from the status of a factor-driven Stage One economy to an efficiency-driven Stage Two economy, as is illustrated in Figure 6.1.

The report suggests that in order to become a Stage Three innovation-driven KBE, Qatar needs to progress three levels from its current state, which is also evident in the GCI values, which suggest that Qatar's competitiveness is predominantly based on the provision of strong economic conditions and government support; this support includes the movement to open the economy and the emphasis on infrastructure. The Innovation and Sophistication Factors and the Efficiency Enhancers sub-indexes do not, however, suggest such a strong performance, instead indicating a requirement for closer analysis of Qatar's efforts to become a KBE over time. The next section will analyse in extensive detail how Qatar can be transformed into a KBE, progressing through these three economic stages to achieve its long-term target.

6.3. KNOWLEDGE-BASED ECONOMY AND ITS 'FOUR PILLARS'

The reasons and mechanisms of continuous growth in general economies and within *per capita* income have a perennial place in the tradition of economic theory. Correspondingly, the transformation of the world's economic system through industrialisation and other future developments has intensified the efforts to deliver a solution that explains these core economic principles. What thus emerges is the notion of growth proposed by Solow (1956) and Swan (1956), which states that increased stocks of capital goods illustrate the relationship between labour, capital, output, and investment. This model pivots on the assumption that countries use their resources efficiently and that there are decreasing marginal returns to capital and labour.

Developments in economic production, with the introduction of new industries, have created an economic environment and product sectors sharing the common characteristic of manufacture requiring a relatively high level of intellectual input (knowledge) and depending less on the traditional production factors of labour and land. Products such as computer software, media and entertainment content, new

pharmaceuticals, online commerce, and financial services are all found within a KBE economy.

Countries such as the United States, Finland, and Switzerland are widely recognised as having successfully taken the opening steps to becoming a KBE, by dramatically increasing their productivity and global competitiveness, creating new jobs, and by gradually enhancing the well-being of their citizens. This upper echelon of countries is followed by a second tier that also seeks transformation into a KBE (Barrera, 2007).

The difference between traditional and knowledge production factors is that the latter is a systemic factor, a result of interlinked socioeconomic elements. These elements comprise the 'four pillars' of a KBE, which are discussed in Chapter 2, and are as follows (Asgeirsdottir, 2006):

(i) innovation;

(ii) new technologies, including ICT and R&D;

(iii) human capital, including education, training and skill development;

(iv) enterprise dynamics or efficient business environment.

Taking these 'four pillars' into detailed consideration, the following analysis will open with a discussion of the economic readiness of Qatar and its ability to transform itself into a KBE.

In examining the KBE readiness of Qatar, the performance of Qatar in relation to these four pillars is evaluated in the following section. In doing so, other benchmark variables are also considered in performance evaluation, such as identified in Figure 6.3; as each of these variables are considered articulating the KBE performance of the economy in terms of knowledge generation, innovation, commoditising and functionalising knowledge, and implementing the knowledge as an outcome. In other words, these variables are considered as the way the KBE is articulated, implemented and observed.

6.4. THE ECONOMIC READINESS OF QATAR FOR ITS TRANSFORMATION INTO A KNOWLEDGE-BASED ECONOMY

Those countries that are at the most advanced stage of the transformation into a KBE suggest that such an economy emerges predominantly from within the existing economic system and business universe. Indeed, most successful KBEs have been built on the strength of existing brand names, client bases, and on human and capital resources. When aligned with the contextual framework of these factors, Qatar's endeavours to transform itself into a KBE raise some pertinent questions. For despite the economic strength of the country and the continuous support of the government, the Qatari private firms are relatively young and their brand recognition is very limited. The level of preparation by the educational system in response to the needs and challenges of a Knowledge-Based Economy in Qatar also poses a potential issue.

The challenge facing Qatar is then the need to develop a support system for enterprises that will enable them to apply leverage to their entrepreneurial strengths, thereby boosting growth. These investments have been largely uncoordinated so far, lacking the direction of a nationwide vision for Qatar's future, and they are often heavily dependent on foreign expertise and skills. The country's relatively weak ability to generate new firms and to support creative enterprises is somewhat attributable to the weak networks that link these different businesses together and which also include both small and medium-sized enterprises (SMEs). In successful KBEs, these networks are typically open, permitting and encouraging a constant flow of goods and services, people, and ideas.

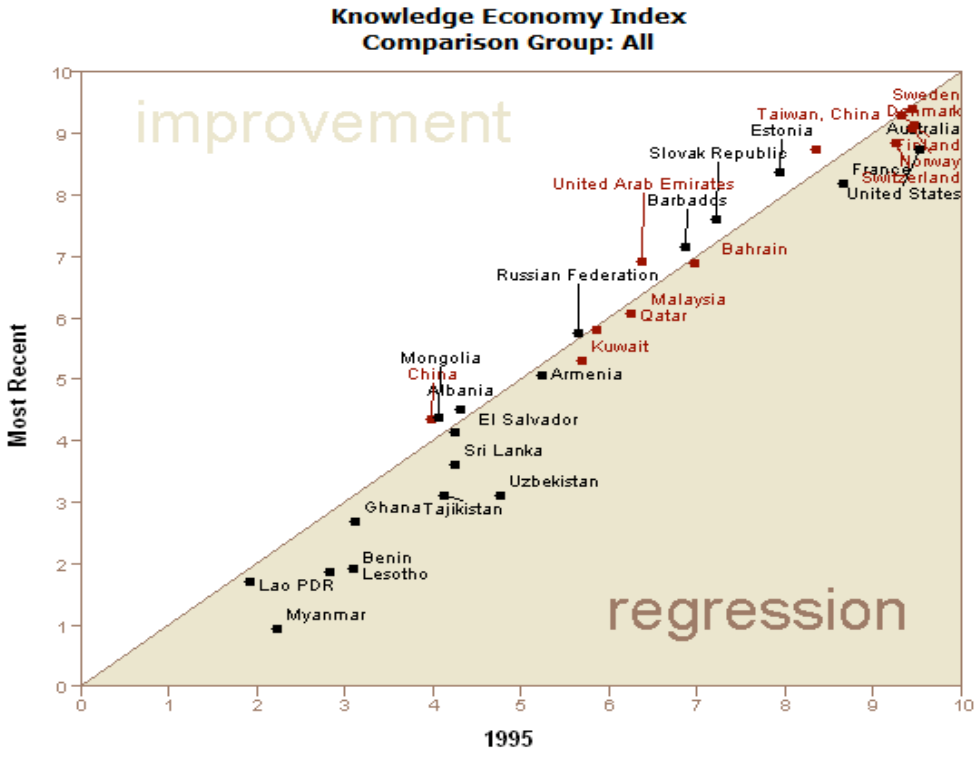
To assess the current situation in Qatar, the World Bank's Knowledge Assessment Methodology (KAM) is employed in this study to establish a benchmark for a country's position relative to others in the global knowledge economy. Here, Qatar is thus compared with regional competitor countries from the GCC area and with small economies that have, to a large extent, successfully made the transition to the status of a Knowledge-Based Economy, such as Finland, Sweden, Switzerland, and Taiwan.

The KAM based Knowledge Economy Index (KEI) is an aggregate index that represents a country's overall level of development as a KBE: it summarises a country's performance across the 'four pillars' of a Knowledge-Based Economy and

it is presented as the average of the normalised values of twelve selected key knowledge indicators.

Figure 6.2 shows Qatar's performance within the KEI in relation to other countries. The horizontal axis plots the performance of countries and regions for 1995 in the KEI; the vertical axis plots the performance of countries and regions in the KEI for the most recent year, which is currently 2012. The diagonal line represents the locus of points where the KEI values from 1995 and from 2012 are equal. Based on this reading of the information, countries and regions that appear above the diagonal line have therefore made an improvement in the KEI since 1995, yet countries that appear below the diagonal line have experienced deterioration in terms of the KEI.

Figure 6.2: The Knowledge Economy Index for Selected Countries

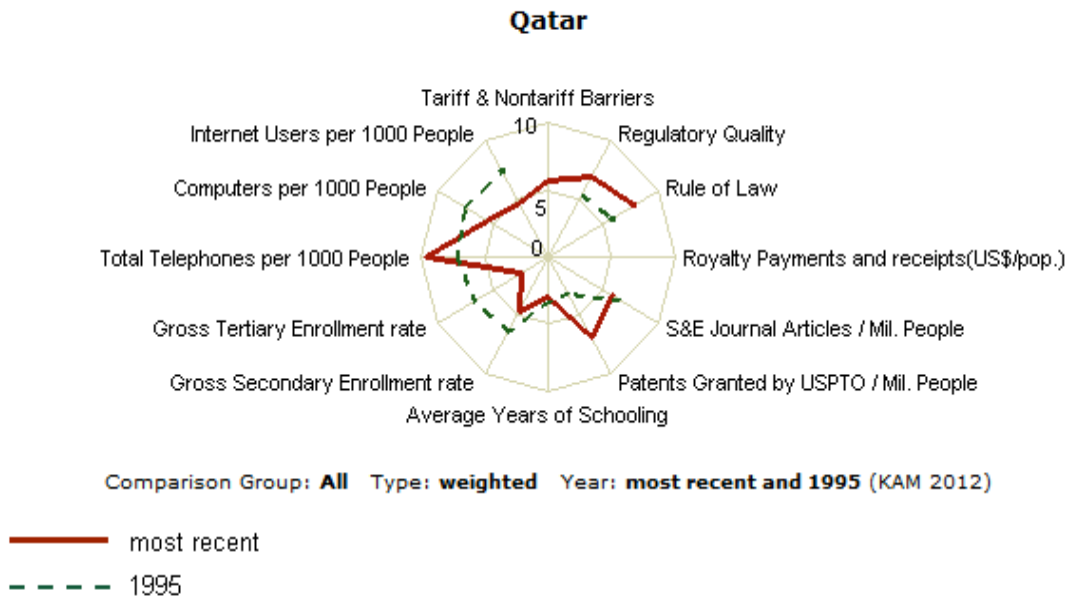


Source: The World Bank KAM (2012)

These findings can be separated into two distinct stages: initially, Qatar's KEI value of 5.84 is well above the averages shown by the Middle East and North Africa (MENA), which is at 4.74 and with a world average of 5.12. In addition, Qatar's rating is also above the value given for its regional competitor, Kuwait, at 5.33. The

respective values for Qatar and Kuwait are lower than those displayed by two other regional competitors: the United Arab Emirates (6.94) and Bahrain (6.90); Qatar's values are also significantly lower than the KEI for Finland (9.33), Norway (9.11), Switzerland (8.87), and Taiwan (8.77). Despite a strong economic performance and government investment, Qatar's KEI value does exhibit a decline of 0.02 from 1995 to 2010; such a decrease however marginal should be evaluated carefully.

Figure 6.3: Qatar's Knowledge-Based Economy Scorecard for Selected Variables



Source: The World Bank KAM (2012)

If the analysis is detailed into the subsections of the KEI, the scorecard shown in Figure 6.3 reveals a decidedly mixed result for Qatar. For it is evident that the economic incentive regime, consisting of barriers to entry, regulatory quality, and the rule of law, provides improved results in all three categories. This development, combined with these improved results, signifies another issue, namely, Qatar's ability to respond to criticisms raised against its economic policy. Specifically, the World Economic Forum GCI of 2005 and 2006 cite the bureaucracy and inconsistent regulatory frameworks as the most important obstacles to FDIs in Qatar. It is, however, clear that the government of Qatar has paid attention to these criticisms and

has taken the necessary action to combat this situation, since the constantly improving positions of Qatar in the GCI are, arguably, a direct consequence of this sensitivity and close attention.

Other variables, drawn from the remaining three of 'four pillars', offer a different and less positive image of Qatar. On this note, the number of ICT proxies in Qatar illustrates a rather limited vision with a fairly sparse distribution of computers and internet connections,, yet to counter this statistic, the number of telephones per person in Qatar has increased dramatically since 1995. Despite the emergence of smart phones that can replace the need for computers, performing as they do some of the duties traditionally assigned to this technology, these empirical values are still inconsistent with Qatar's long-term plan of achieving a KBE status.

To develop this theme further, the innovation proxies are also not encouraging, based on the number of scientific articles published throughout the period. A positive element to be gleaned here, however, is that the number of patents awarded to Qatari applicants has increased, thereby providing encouragement for the KBE transformation efforts. The final emphasis on education undercuts this sentiment completely, as in all three of the proxies summarised in both Figure 6.3 and Table 6.3, Qatar's education has regressed. At both secondary and tertiary levels of the education system, the number of school enrolments has decreased and the average number of years spent in school has similarly struggled to maintain a stable figure. Although disquieting, these statistics can be explained to an extent by the corresponding stability in Qatar's population. It is clear, however, that Qatar's education ratings ultimately pose a potential threat towards its efforts at becoming a KBE. These issues will be investigated in greater detail over the following sections, where close attention will also be paid to additional proxies on education.

If the relevant indicators for Qatar are contrasted against those of its regional competitors, the results are equally mixed, since each of these three countries, Qatar, Kuwait, and the UAE, have their own strengths and weaknesses. Economic incentives are, perhaps, Qatar's strong point when compared to the regional competition, yet it falls behind both Kuwait and the UAE in terms of the number of internet users and computers per one thousand people. Although it must also be stated that the results

detailing the number of telephones per one thousand people across these countries are comparatively similar. Kuwait offers the best results for innovation proxies; those same values for Qatar and the UAE are, however, almost identical. With regard to the "pillar" addressing education, the UAE provides the best results; Qatar and Kuwait, despite exhibiting similar levels in this field, fall behind their regional competitor, especially in the areas of secondary school enrolment and with the average number of years spent in school.

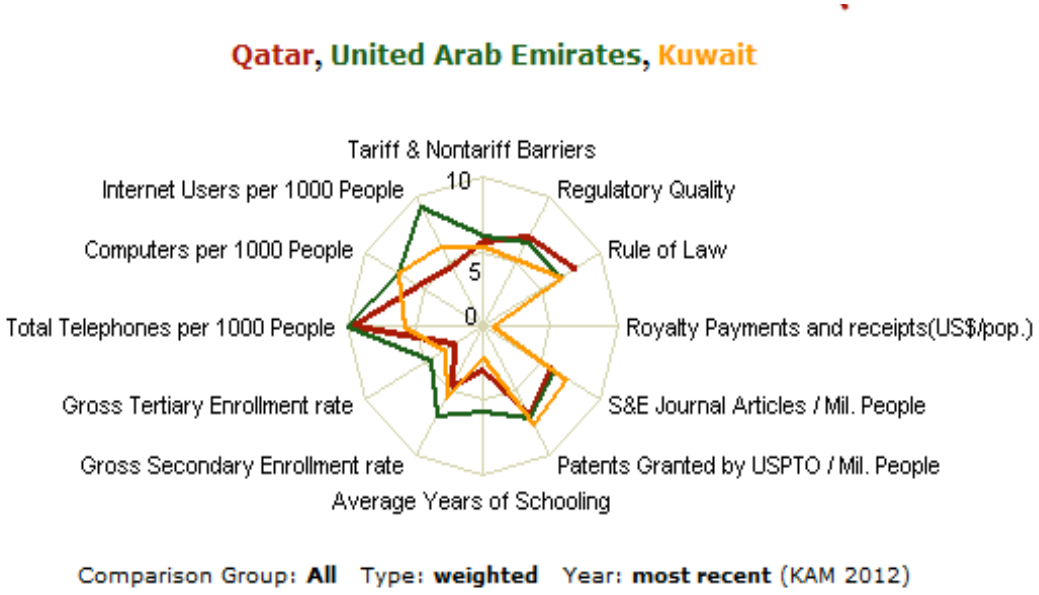
Table 6.3: Qatar's Knowledge-Based Economy Scorecard for Selected Variables

	Qatar (Most Recent) (Group: All)		Qatar 1995 (Group: All)	
Variables	**Actual**	**Normalised**	**Actual**	**Normalised**
Tariff & Nontariff Barriers	82.4	5.8	n/a	n/a
Regulatory Quality	0.62	6.99	0.35	5.38
Rule of Law	0.96	7.81	0.12	5.9
Royalty Payments and Receipts (U.S.$/Population)	N/A	N/A	N/A	N/A
S&E Journal Articles / Million People	42.49	5.86	44.7	6.41
Patents Granted by USPTO / Million People	1.29	6.99	0	3.17
Average Number of Years Spent in School	7.45	2.99	6.15	3.31
Gross Secondary Enrolment Rate	85.22	4.76	79.72	6.46
Gross Tertiary Enrolment Rate	10.24	2.48	27.48	6.78
Total Telephones per 1,000 People	1.950.00	9.66	270	7.31
Computers per 1,000 People	160	5.62	60	7.7
Internet Users per 1,000 People	280	4.69	0	7.45

Source: The World Bank KAM (2012)

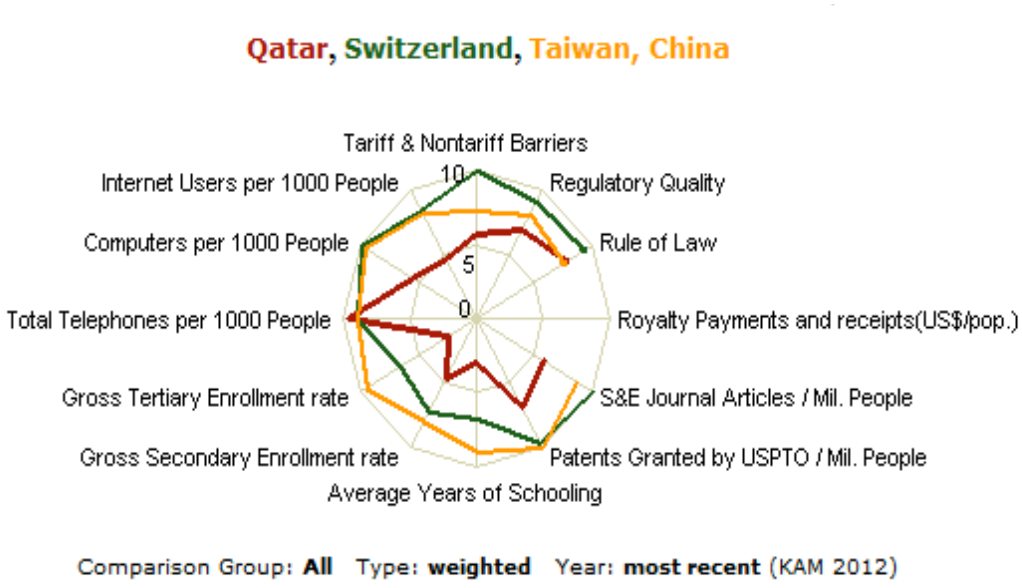
When the focus of this survey is expanded to include the global competition, it becomes apparent that Qatar, with the exception of the application of the rule of law in relation to Taiwan, requires substantial development before it can compete with a country such as Switzerland, the most competitive economy in the world in 2012. This distance is further discernible from both the 'pillars' for education and innovation, highlighting crucial weaknesses in Qatar's economic system.

Figure 6.4: Qatar and its Regional Competitors



Source: The World Bank KAM (2012)

Figure 6.5: Qatar and the Global Benchmark

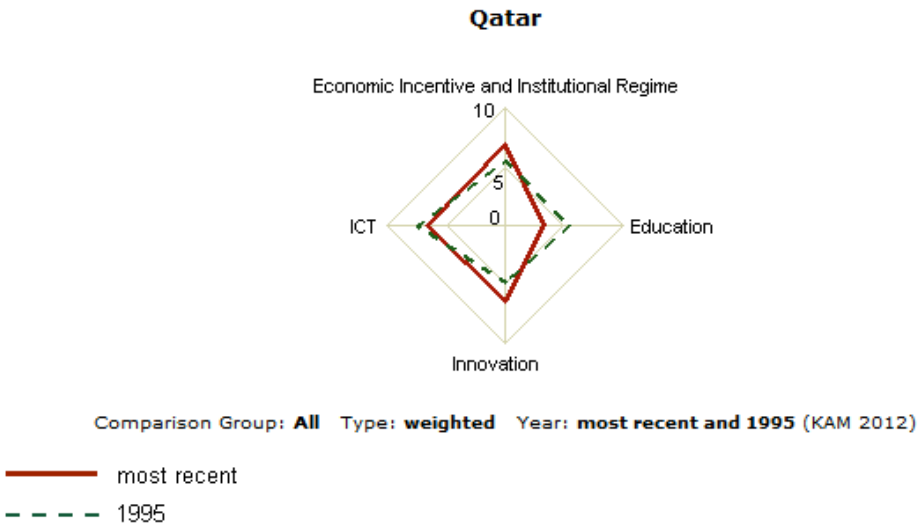


Source: The World Bank KAM (2012)

The essence of the Figure 6.5 is best encapsulated by Figure 6.6, for even though the 'pillars' for economic incentives, the institutional regime, and innovation have demonstrated improvement since 1995, the 'pillar' allocated to ICT has somewhat

decreased, and, crucially, the 'pillar' dedicated to the education area has undergone significant regression. Thus, the main reason for the slight decline in Qatar's KAM indicators is mainly due to the issues surrounding the 'pillar' associated with education. The decline in the education pillar can be attributed to the expatriate communities; as the international index does not make any distinction between Qataris and non-Qataris in terms of their access to education. The inaccessibility of free education can make it terribly difficult for the expatriates to participate in the education sphere in terms of getting the right and enough education for their children. This can explain as to why the most recent education index has decreased for Qatar.

Figure 6.6: The 'Four Pillars' of the Knowledge-Based Economy in Qatar



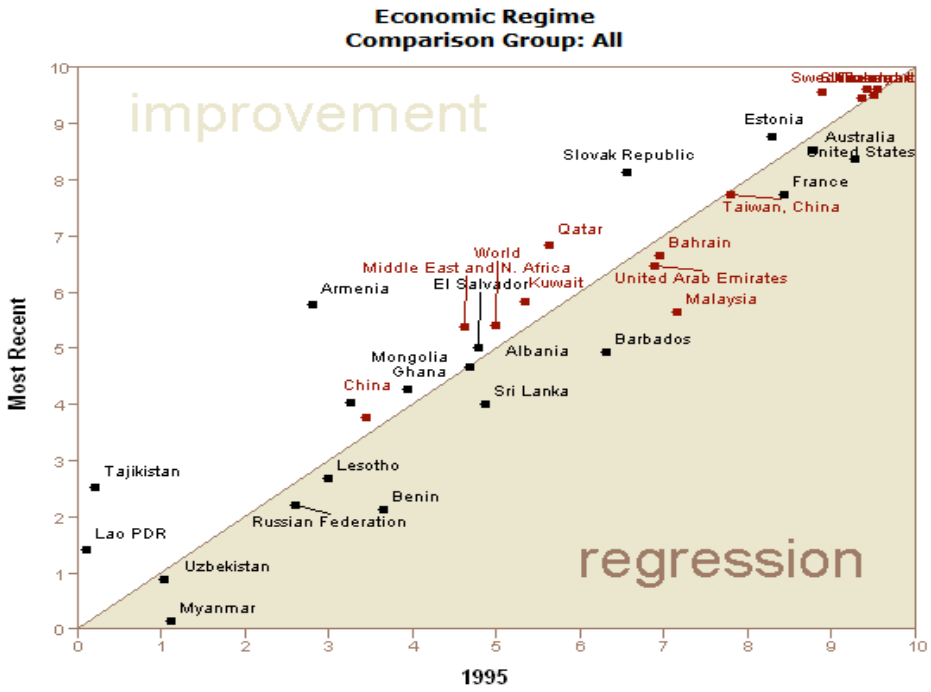
Source: The World Bank KAM (2012)

6.5. THE ECONOMIC INCENTIVE REGIME

For a KBE to thrive, a country must provide a supportive environment for businesses and entrepreneurs, in other words, a balanced and dependable combination of regulations, implementation practices, incentives, and institutions possessing satisfactory levels. A higher degree of risk exists when it comes to investing in new products, new markets, and new technologies; such risks must therefore be mitigated by the provision of a stable and predictable economic and business climate.

Qatar, in contrast to many of the Stage Two transition economies, has a functioning market economy and strong macroeconomic performance. It has, moreover, developed many market regulations and institutions, and the country has the basic administrative and legal capacity to deal with emerging regulatory issues.

Figure 6.7: The Performance of Economic Incentives and the Institutional Framework



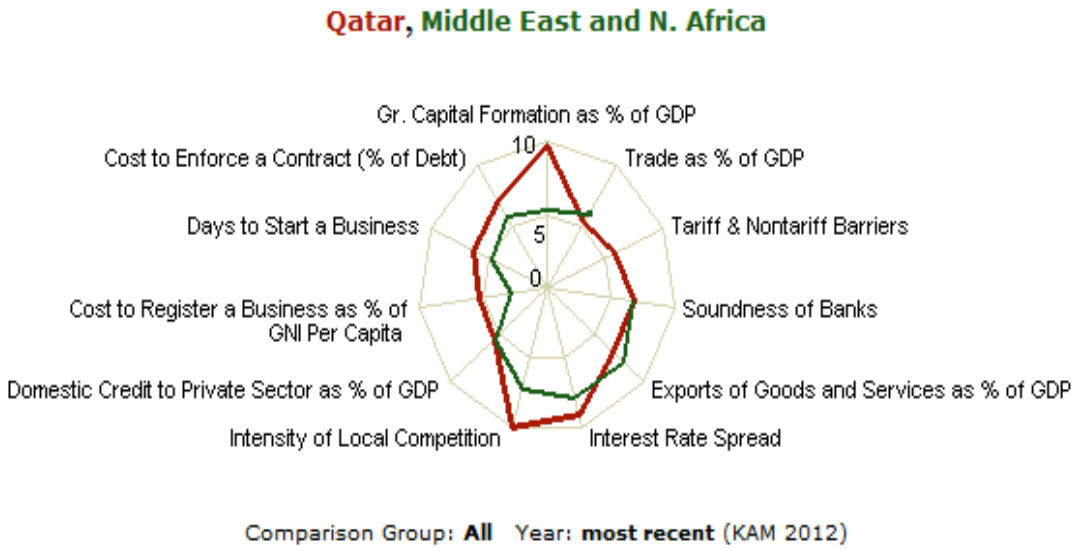
Source: The World Bank KAM (2012)

Figure 6.7 highlights a definite improvement in Qatar's economic incentives towards attaining the status of a KBE. Qatar has not only established a strong economic framework, especially in comparison to many other developing economies, but it has also greatly improved its performance since 1995.

Such developments are further supported by the findings of Figure 6.8, for apart from the function of trade and the exports of goods and services as a percentage of GDP; the economy of Qatar has improved in all the other listed indicators. The slight setbacks experienced by these two categories can be explained by the sizeable increase of Qatar's hydrocarbon exports and the resultant increase in GDP. It is demonstrable that Qatar has opened up its economy to competition, decreased

bureaucracy (and the costs associated with such activities) through the establishment of enterprises, and it has improved its legal capacity and system. In addition to these decisive actions, the Gross Capital Formation has also increased, further proving that Qatar has a strong and rapidly developing economy.

Figure 6.8: Qatar's Knowledge-Based Economy Scorecard for Economic Incentives



Source: The World Bank KAM (2012)

Two important points should, however, be taken into account when considering any additional improvements to the economy. Trade barriers, echoing their role in 1995, still present an obstacle to development in 2011and the soundness of the financial system, especially with regard to the banks, is questionable. Not only have the statistics for Qatar remained the same since 1995, but this is also the case in the Middle East and North Africa, where they too have maintained the same level of (Figure 6.8). Given that the economies of both these regions have a reputation for the soundness of their financial systems and banks, this obvious incongruity with the reality of Qatar's statistics instils a troubling note in the otherwise impressive performance of its economic system.

A KBE correspondingly requires the engagement of the civil society in the design and implementation of economic policies and regulations, both on a central and on a local level. The idea of the KBE is epitomised by the emergence of the Internet and, akin to

that technology, it will not develop without broad public participation, channelled through a functionally organised system that both produces and shares knowledge.

The mentioned linkages for Qatari firms are, however, questionable. Although Qatar's economy has been made more open, especially on the level of local competition, the existence of trade barriers still limit the transfer of knowledge from foreign firms, which in turn limits the potential and adaptability of the economy to more recent developments and innovations. From this analysis, it can be argued that the relatively weak values surrounding the soundness of the banks are another manifestation of this limitation. Foreign international banks and other financial firms with better risk management practices and more developed disclosure and information systems can be consequently excluded from the current banking system, preventing the exchange of knowledge and ultimately limiting the ability of Qatar's banks and financial services to improve their standards.

Table 6.4: Qatar's Knowledge-Based Economy Scorecard for Economic Incentives

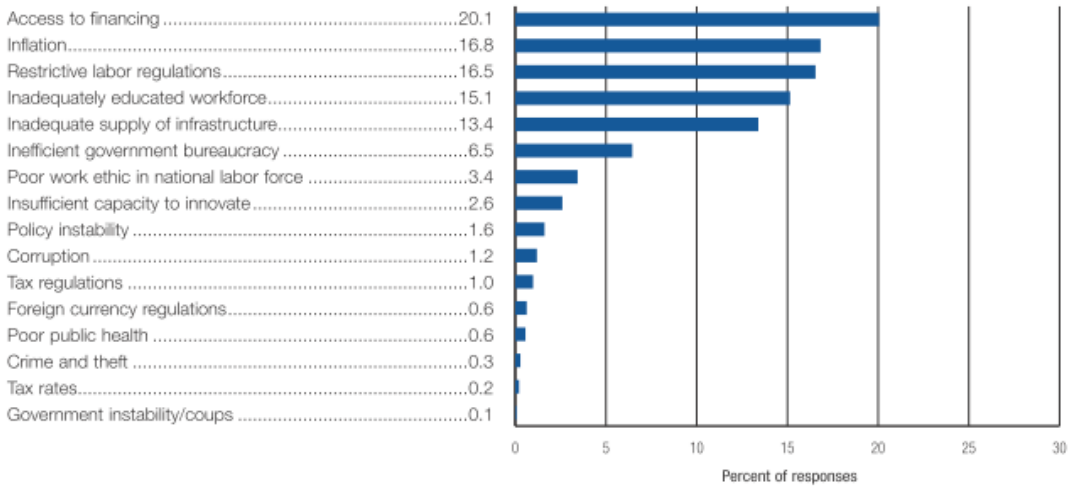
	Qatar		Middle East and North Africa	
	(Group: All)		(Group: All)	
Variables	**actual**	**normalized**	**actual**	**normalized**
Gr. Capital Formation as % of GDP, 2005-2009	37	9.72	23.5	5.49
Trade as % of GDP, 2009	78	5.39	91	6.17
Tariff & Nontariff Barriers, 2011	82.4	5.8	n/a	n/a
Soundness of Banks (1-7), 2010	5.5	6.87	5.49	6.64
Exports of Goods and Services as % of GDP, 2009	47	6.9	52	7.89
Interest Rate Spread, 2009	3	9.16	4	7.85
Intensity of Local Competition (1-7), 2010	6.1	10	5.21	7.18
Domestic Credit to Private Sector as % of GDP, 2009	51	5.51	51	5.51
Cost to Register a Business as % of GNI Per Capita, 2011	8.3	5.32	24.84	2.94
Days to Start a Business, 2011	12	6.38	15.24	4.86
Cost to Enforce a Contract (% of Debt), 2011	21.6	7.16	23.62	5.99

Source: The World Bank KAM (2012)

Any development towards a KBE is dependent on whether a country has well-established and responsive institutions (notably, labour market institutions), sophisticated financial markets, well-functioning products and services, and a working bureaucracy combined with a sound regulatory system and a legislative framework which place special emphasis on intellectual property rights.

Qatar is not included in the 'Doing Business Study' by the World Bank and the IFC due to its small size and the limited availability of data on the ease of starting a business, dealing with licenses, getting credit, and enforcing contracts in Qatar. It should be noted that an economy intending to transform itself into a KBE must be careful about the accuracy and content of the dataset it provides to any potential investors

Figure 6.9: The Most Problematic Factors for Doing Business in Qatar



Source: The World Economic Forum, Global Competitiveness Index (2012)

The GCI, compiled annually by the World Economic Forum, does, however, provide some indication of any problematic factors that could influence or interfere with business in Qatar. As illustrated by Figure 6.9, the most problematic factors in relation to doing business in Qatar are comprised of the following: the accessibility of financial backing, inflationary pressures in the economy, restrictive labour regulations, the qualifications of the workforce, inadequate infrastructure, and inefficient government bureaucracy. Other factors such as an insufficient capacity to innovate, political instability, corruption, tax issues, and crime are not perceived as

problematic when it comes to business transactions in Qatar. Complaints about the bureaucracy have decreased in more recent editions of the reports issued by the GCI, yet complaints directed at labour market regulations have remained constant, despite Qatar's introduction of the National Labour Market Strategy and Action Plan in 2007, which sought to tackle labour market issues.

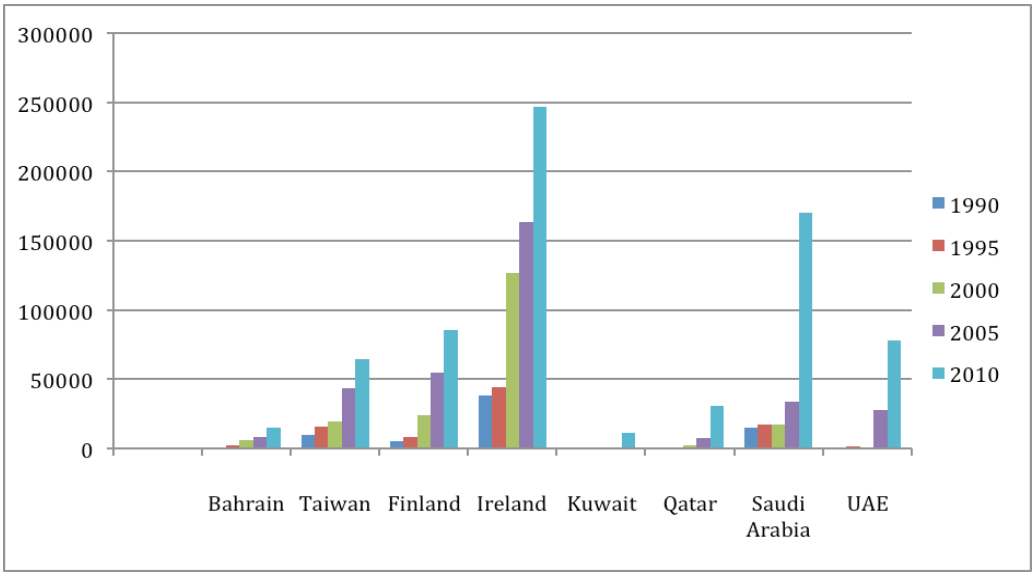
Complaints about the accessibility of financial backing can be directly linked to the aforementioned issues associated with the soundness of the banking system. A more important problem can, however, be identified in the complaints about the education and business readiness of the workforce. According to the latest KAM framework indicators on education, the performance of Qatar has declined in this particular area; it would thus appear to be the greatest obstacle facing Qatar in the pursuit of its long-term target.

The transformation into a KBE requires a network of organisations and firms, both locally and internationally, in order to provide innovations and enable the transfer of knowledge. For the majority of countries poised on the verge of this act of transformation, the necessary knowledge that is to be transferred comes from international firms which have themselves originated in countries that have also witnessed the transition to a KBE; these firms have developed their expertise through many years of experience in various markets. This transfer of knowledge is mainly accomplished through FDIs and, by extension, through a country's ability to attract sufficient levels of FDI, enabling it to receive the required knowledge base from the developed markets and firms. According to the World Investment Report of the United Nations (2012), when situated within the context of FDI, Qatar does not exhibit impressive results, for as is evidenced by Figure 6.10, the FDI stock in Qatar forms a minor part of its GDP.

In terms of its FDI, Qatar operates on a lower level than such established KBEs as Ireland and Switzerland; other countries, including Taiwan, also have a greater amount of FDI due to their possession of strong supply chains in technological investments. These statistics further indicate the distance that Qatar still has to cover in its bid to become a KBE. Coupled with this rather sobering indication, the level of FDI attracted by Qatar is similarly below that gained by its regional competitors,

namely, Saudi Arabia and the UAE. Not only have these two countries attracted greater levels of FDI, but this gap between Qatar and its regional competitors has also increased since 1995, reaching substantial figures between 2005 and 2010. Qatar has, however, received more FDI during this same period than two of its other regional competitors: Bahrain and Kuwait.

Figure 6.10: FDI Stocks as a Percentage of GDP (Inward), 1990 – 2012



Source: UNCTAD – World Investment Report (2012)

FDIs in Qatar are mainly concentrated within the hydrocarbon sector, which thereby implies that there is little foreign investment in other sectors of Qatar's economy. Consequently, the possibility of any positive spillover effects appearing in non-hydrocarbon sectors, following the adoption of new knowledge and technology from foreign investments, remains low. This situation could be attributed to the Qatari government's tender procedures, which give a preferential treatment of 10% in prices to Qatari contractors and only 5% to Gulf contractors. An additional reason for this lack of FDI in Qatar may be found in the failure to allow foreigners to take a share in the privatisation of public services. Furthermore, foreign companies pay income tax in the range of 5% to 30% of their profits, compared to the complete exemption of Qatari companies (Qatar Planning Council Background Report No. 1, 2006).

One of the most crucial areas preventing FDI in Qatar is that of its legal and regulatory framework, although this factor is somewhat offset by the improvements

perceived in the KEI indicators since 1995. To clarify these findings, the governance framework will, however, require greater investigation. This information is summarised in Figure 6.11, where, based on the KAM indicators, the analysis of Qatar can be divided into three stages.

Figure 6.11: Qatar's Performance on Selected Governance Indicators

Source: The World Bank KAM (2012)

During the initial stage of providing decisive encouragement, Qatar has achieved success in its fight against corruption, and, in addition to this, the country has been secure with regard to its political stability. For both of these categories, Qatar has achieved results comparable to those attained by the developed KBEs; indeed, the country is far better attuned politically than its regional competitors. Qatar also outstrips its regional competitors in the areas of regulatory quality, the rule of law, and government effectiveness; these results are not surprising in the context of Qatar's efforts to reduce bureaucracy and improve regulatory effectiveness, yet despite being ahead of the regional competition, Qatar still needs much improvement in these three fields. Finally, even though the categories for press freedom and voice and accountability are equal to those of Qatar's immediate competition, they are still considerably lower than the same ratings for the developed markets. The problem in both these governance indicators is ingrained within the system itself and thus demands radical changes throughout the country. What therefore emerges is that

liberalisation of the financial markets and economic system should be accompanied by liberalisation in the governance system, and pluralist and democratic movements should support it.

6.6. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

The use of ICT is essential to improving the quality and cost-efficiency of existing methods of production and services; it also plays a crucial role in the creation of new opportunities in trade, governance, education, business connectivity, healthcare delivery, and in the development of environmental and natural resources. The sheer range of possible opportunities emphasises that countries need to harness the full potential of ICT and invest it in all the various sectors of the economy. ICT can similarly function as powerful tool for achieving higher productivity, efficiency, and competitiveness in all the aspects of an economy.

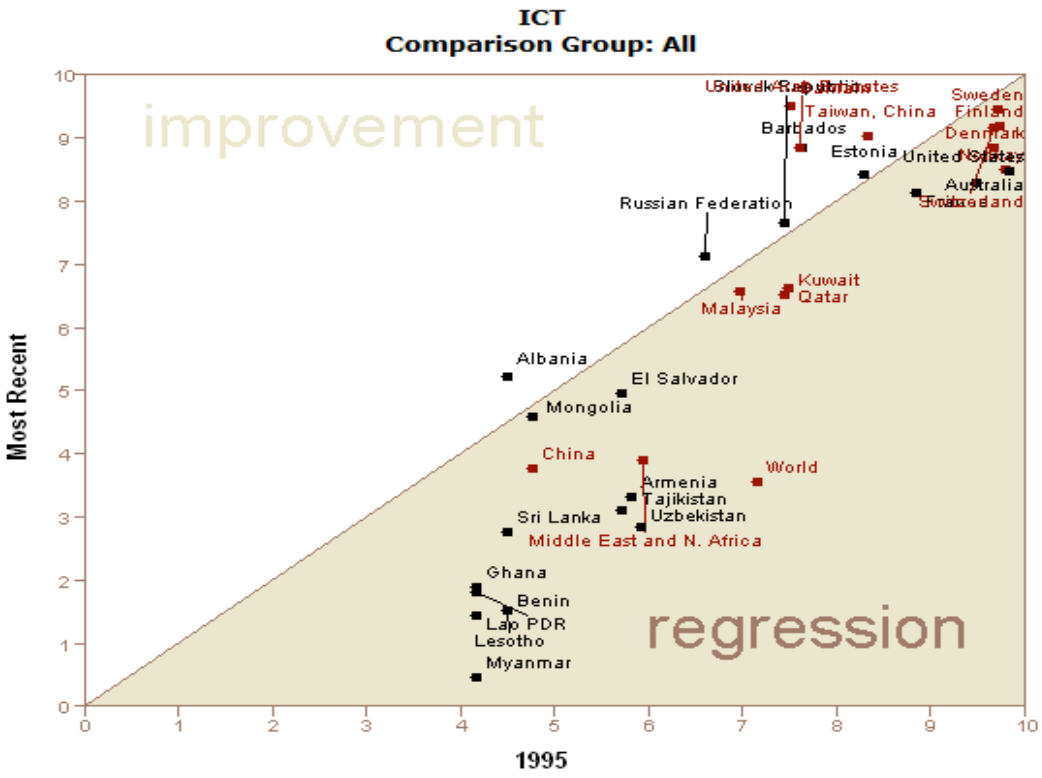
The information infrastructure of a country consists of telecommunication networks, strategic information systems, and the skilled human resources required to develop such networks and systems; these components all operate within legal frameworks and policies that affect their deployment. To build a strong information infrastructure, it is necessary to mobilise a variety of stakeholders that are involved in its use, including: the government, businesses, individual users, and the actual telecommunication and information service providers.

Figure 6.12 shows the KAM ICT Index for 1995 and 2012. Qatar's ICT Index fell from 5.86 in 1995 to 6.65 in 2012. When placed within the context of Qatar's efforts in this field, this decline is discouraging and it suggests some important issues, yet Qatar still ranks above the average figures shown for both the MENA region (3.92) and the World (3.58). This positive ranking is again countered by Qatar's position below the averages recorded not just for Europe and Central Asia (7.47), but also for developed KBEs such as Sweden (9.43), Switzerland (8.87), Finland (9.33), and Singapore (8.26).

Weaknesses in the ICT environment are largely attributable to regulatory restrictions that limit supply and raise costs. As a result, the usage, diffusion, and production of ICT products in Qatar fall short of their potential. Indeed, the earlier suggestion

directed at the financial services sector on the need to open it to competition can be repeated for ICT in Qatar.

Figure 6.12: The Performance of the ICT 'Pillar'

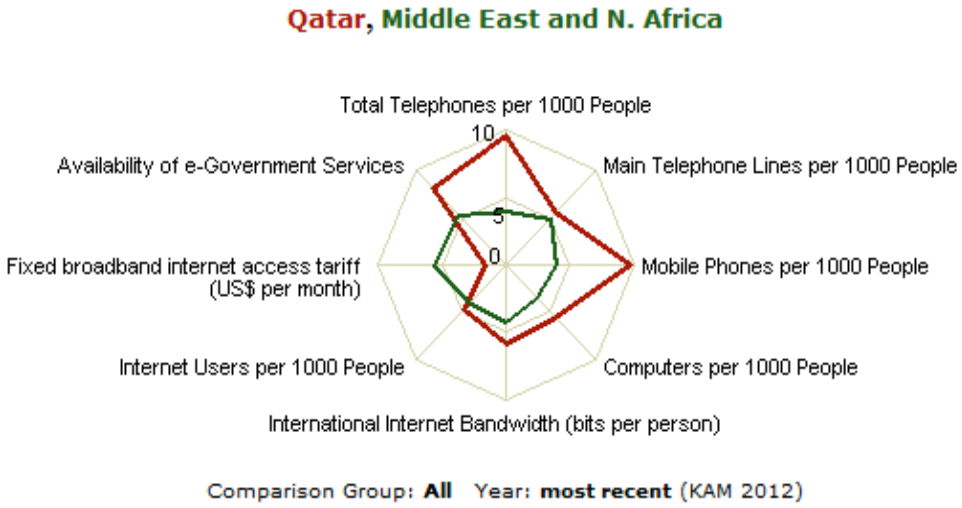


Source: The World Bank KAM (2012)

The World Economic Forum published the Global Information Technology Report (GITR), in which it defines a Networked Readiness Index (NRI); this NRI represents a nation's degree of preparation in terms of its participation in, and ability to benefit from, ICT developments. From a selection of one hundred and forty-two countries, Qatar ranked twenty-eighth in the NRI; its regional competitors, Bahrain, the UAE, and Kuwait, were located in the twenty-seventh, thirtieth, and sixty-second positions. Globally developed countries such as Sweden, Singapore, Finland, Switzerland, and Ireland held the following NRI rankings of first, second, third, fifth, and twenty-fifth respectively.

Disaggregating the information infrastructure 'pillar' into selected indicators for Qatar and the MENA region presents a more detailed image of Qatar's performance, as in Figure 6.13 and Table 6.5.

Figure 6.13: Qatar's Knowledge-Based Economy Scorecard for Selected ICT Variables



Source: The World Bank KAM (2012)

Table 6.5: Qatar's Knowledge-Based Economy Scorecard for Selected ICT Variables

	Qatar		Middle East and North Africa	
	(Group: All)		(Group: All)	
Variable	Actual	Normalized	Actual	Normalized
Total Telephones per 1000 People, 2009	1.950.00	9.66	960	4.14
Main Telephone Lines per 1000 People, 2009	200	5.62	170	5
Mobile Phones per 1000 People, 2009	1.750.00	9.72	790	3.93
Computers per 1000 People, 2008	160	5.62	70	3.49
International Internet Bandwidth (bits per person), 2009	2.044.00	5.92	523	4.25
Internet Users per 1000 People, 2009	280	4.69	240	4.14
Fixed broadband internet access tariff (US$ per month), 2009	55	1.79	27	5.79
Availability of e-Government Services, 2008	5.26	8.08	4.05	5.32

Source: The World Bank KAM (2012)

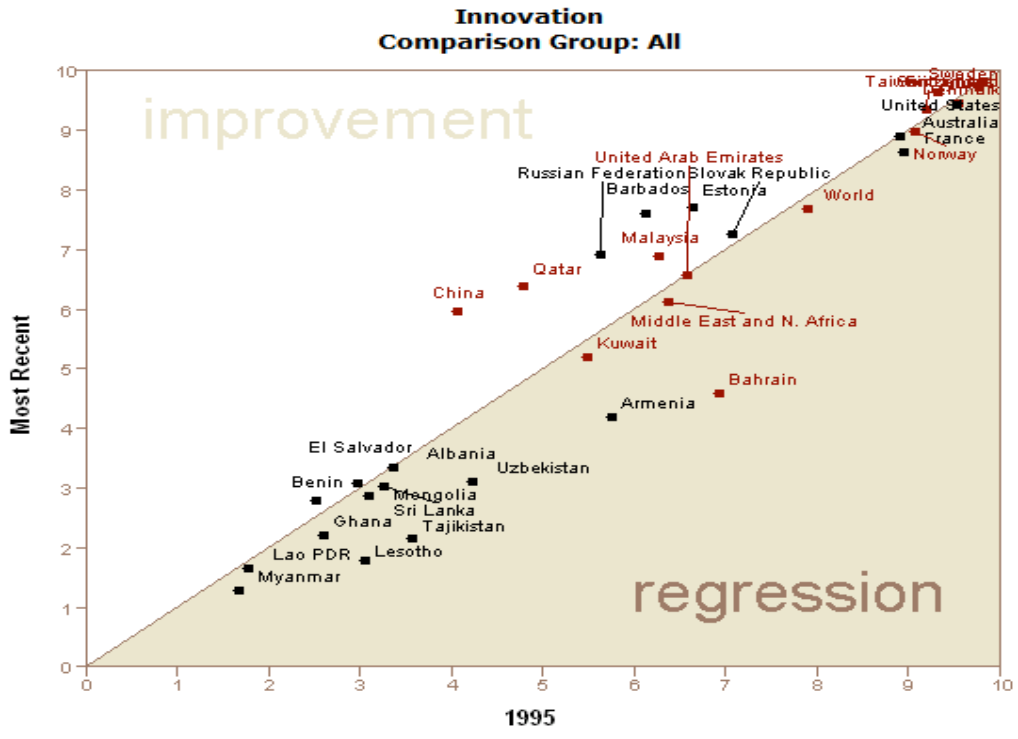
6.7. EXPLORING THE INNOVATION 'PILLAR' IN QATAR

Some enterprises (and sectors) of Qatar's economy hold a prominent global position, yet this success is simultaneously undercut by the implication that the country's

competitiveness has been built primarily on its natural resources. In this situation there is the constant risk of the economy growing in one direction at the expense of other sectors and thus experiencing the consequences of a "Resource Curse".

It is then reassuring to learn that Qatar's innovation "pillar" indicators suggest a significant improvement since 1995, for its Innovation Index has risen from 4.79 in 1995 to 6.42 in 2012. In addition, Qatar still ranks above both the average for the MENA region (6.14) and those of its regional competitors, Bahrain (4.61) and Kuwait (5.22). Although Qatar's average value in this ranking is almost at the same level as that of the UAE (6.62), this performance is, however, lower than the World average (7.72); it is also significantly lower than the average recorded for Europe and Central Asia (8.28) and other developed KBEs, such as Sweden (9.74), Switzerland (9.86), Finland (9.66), and Singapore (9.49).

Figure 6.14: The Performance of the Innovation 'Pillar'

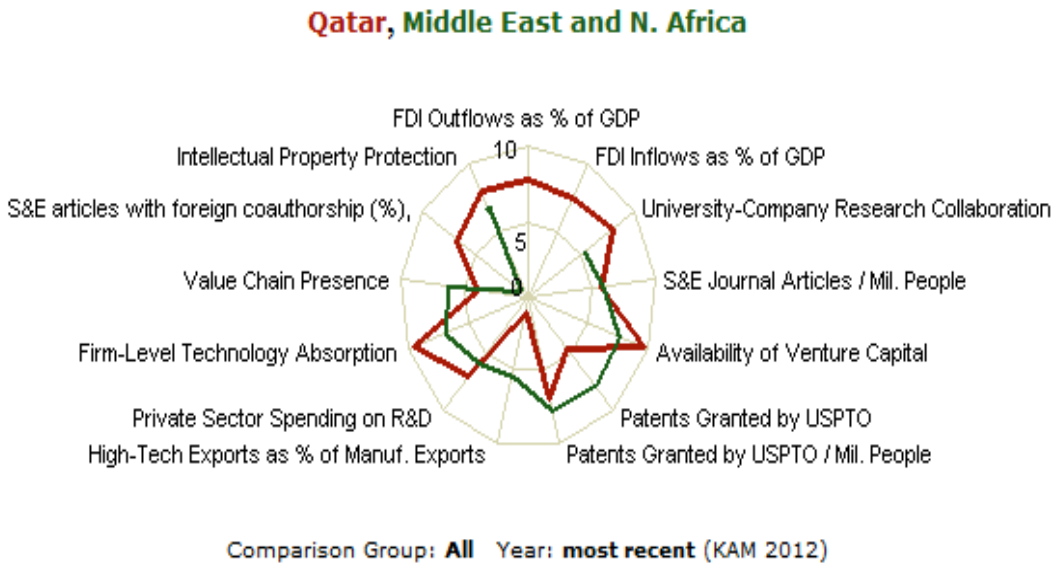


Source: The World Bank KAM (2012)

The division of the information infrastructure "pillar" into selected indicators for Qatar and the MENA region reveals that Qatar's performance is relatively attuned to

the regional average, although it is stronger on some indicators and weaker in others. Academia appears to be supporting Qatar's movement towards attaining the status of a KBE, both through the provision of research and development assistance to private sectors and through the encouragement of international knowledge transfers via collaborations in academic research. Further positive indicators include stronger firm-level technology absorption and higher levels of research and development spending from the private sector. Despite the previously discussed limitations on the financial sector, the availability of venture capital to entrepreneurs is also greater than the regional average. High technology exports are, however, almost non-existent and this, coupled with the small number of patents awarded to Qatari inventors, is indicative of a possible problem area for Qatar. In other words, the economy of Qatar seems to be encouraging research and development and innovative activities, but it simultaneously fails to reap the benefits that such activities provide in economic terms.

Figure 6.15: Qatar's Knowledge-Based Economy Scorecard for Selected Innovation Variables



Source: The World Bank KAM (2012)

Although the private sector's research and development spending in Qatar is above that of the regional average, it is still very low in comparison to that of the developed KBEs. Correspondingly, even though there is a pressing need to promote new

enterprises that can compete on the global stage and that are capable of becoming a significant source of jobs and exports, commercial financing for innovation and research and development is still limited. In order to strengthen the innovation support for SMEs, the government of Qatar should investigate the potential of a financial support mechanism that has a public nature but a private sector orientation. It is essential that any such support should be deployed from a truly decentralised approach, with the local business and administrative communities taking a primary role in ownership.

Table 6.6: Qatar's Knowledge-Based Economy Scorecard for Selected Innovation Variables

	Qatar		Middle East and North Africa	
	(Group: All)		(Group: All)	
Variable	Actual	Normalized	Actual	Normalized
FDI Outflows (% of GDP), 2004-08	3.15	7.81	n/a	n/a
FDI Inflows (% of GDP), 2004-08	6.88	7.43	n/a	n/a
University-Company Research Collaboration (1-7), 2010	4.5	8.02	3.55	5.38
S&E Journal Articles / Mil. People, 2007	42.49	5.86	46.32	5.97
Availability of Venture Capital (1-7), 2010	4.1	9.62	3.16	7.63
Patents Granted by USPTO, average 2005-2009	1.4	4.59	63.47	7.9
Patents Granted by USPTO / Mil. People, average 2005-2009	1.29	6.99	3.66	7.71
High-Tech Exports (% of Manuf. Exports), 2009	0	1.15	6	5.5
Private Sector Spending on R&D (1-7), 2010	3.5	7.1	3.09	5.92
Firm-Level Technology Absorption (1-7), 2010	6.1	9.54	5.21	7.02
Value Chain Presence (1-7), 2010	3.3	4.05	3.77	6.39
S&E articles with foreign co authorship (%), 2008	81.95	6.74	42.97	0.87
Intellectual Property Protection (1-7), 2010	4.8	8.02	4.09	6.72

Source: The World Bank KAM (2012)

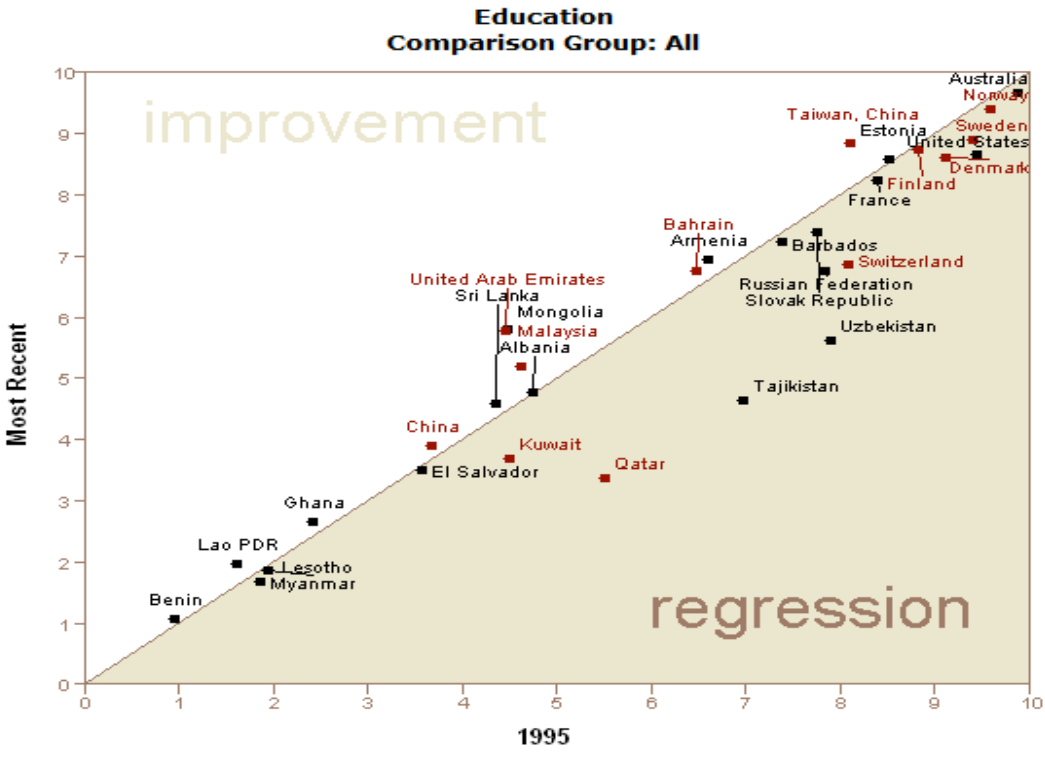
6.8. EXPLORING THE EDUCATION 'PILLAR'

Education is an essential component of a KBE: it provides the necessary specialised work force for creating, sharing, disseminating, and using knowledge effectively in

economic terms. Improving the quality of every level of the education system is thus a strong prerequisite for Qatar's transformation into a KBE.

The value for Qatar's education "pillar" has decreased from 5.52 in 1995 to 3.41 in 2012; this constitutes a sharp decline for a country intending to make the transition to a KBE and it has the potential to undermine Qatar's efforts in the long-term. Furthermore, Qatar's value here ranks just below the averages ascribed to the MENA region, (3.48) Kuwait (3.70), and to its regional competitors, Bahrain (6.78) and the UAE (5.80). Qatar's economic performance in this area is lower than the World average (3.72) and descends significantly below the averages for Europe and Central Asia (7.13) and other developed KBEs such as Sweden (8.92), Switzerland (6.90), Finland (8.77), and Singapore (5.09). All of these values proffer a decidedly negative outlook for Qatar's ability to achieve its KBE target.

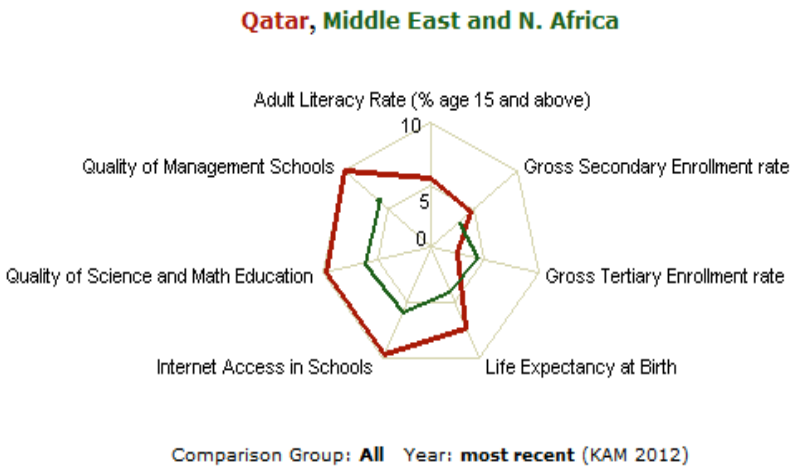
Figure 6.16: The Performance of the Education 'Pillar'



Source: The World Bank KAM (2012)

Splitting the education 'pillar' into selected education indicators for Qatar and the MENA region provides a detailed image of Qatar's education performance that is correlated by Figure 6.17 and Table 6.7.

Figure 6.17: Qatar's Knowledge-Based Economy Scorecard for Selected Education Variables



Source: The World Bank KAM (2012)

Table 6.7: Qatar's Knowledge-Based Economy Scorecard on Selected Education Variables

	Qatar		Middle East and N. Africa	
	(Group: All)		(Group: All)	
Variable	actual	normalized	actual	normalized
Adult Literacy Rate (% age 15 and above), 2007	94.72	5.55	n/a	n/a
Gross Secondary Enrolment rate, 2009	85.22	4.76	74.48	3.28
Gross Tertiary Enrolment rate, 2009	10.24	2.48	28.12	4.43
Life Expectancy at Birth, 2009	76	7.31	71	4.07
Internet Access in Schools (1-7), 2010	6.3	9.77	4.24	5.88
Quality of Science and Math Education (1-7), 2010	5.9	9.77	4.39	6.18
Quality of Management Schools (1-7), 2010	6.1	10	4.37	6.01

Qatar, in comparison to the average figures for the MENA region, demonstrates a better performance in terms of higher education, especially in the fields of Science, Mathematics, and Business; this result directly contradicts the complaints made by businesses on the inadequacy of the labour force. The readiness of graduates to enter the business world and work force therefore comes into question.

The position of the secondary and tertiary enrolment rates, either at the same level or one lower than the average for MENA region, which indicates source of an additional problem. In this case, it is the lack of support between the lower and higher levels of education, whether this is terms of the number of graduates or the quality of education at the former level failing to fulfil the requirements of mid-level positions.

Responding to these weaknesses, the Supreme Education Council (SEC) was established in 2004 to manage a major education reform, entitled 'Education for a New Era', at both primary and secondary levels. The essence of this reform is the development of a curriculum standard, with the implementation of Grades one to twelve in four main subjects: Arabic, English, Mathematics, and Science. The reform further established both a systematic assessment of student achievements and a new school model with managerial autonomy that was described as 'Independent Schools'.

Crucially, these weaknesses in the education and training systems of Qatar are of a fundamental nature. Qatar Planning Council (2007) indicates some of the key characteristics of these flaws, including the emphasis that many students do not reach curriculum standards, that there are high dropout rates, especially for boys, and that too much focus is placed on rote learning. The most pertinent criticism is that the curriculum for most disciplines is outdated. As a result, even with the influx of new resources into these systems, tangible improvements can only be expected from long–term investment and support.

6.9. THE CHALLENGES AHEAD AND THEIR IMPLICATIONS FOR POLICY

In the light of the preceding analysis, this section is going to identify some of the important challenges facing Qatar in the near future and stemming from its ambition to transform itself into a KBE. What implication these challenges will have on policy is something that will be addressed alongside a focus on possible solutions. To be consistent in the approach to these discussions, this section will also adhere to the framework already outlined by the emphasis on the 'four pillars necessary to a KBE'.

A central aspect of contemporary Qatar is the strength of its economy and economic growth; indeed, it is particularly prosperous in terms of *per capita* GDP, meaning that it offers the best economic conditions for its citizens.

It should, however, be noted that these improvements are linked to the development of hydrocarbon energy resources. Although the proven reserves for both oil and natural gas are expected to maintain their current level of production for decades and despite the emergence of new technologies in the mining industry that actually increase the life span of these resources, Qatar's economy is still flawed. For ultimately, the country's dependence on the revenue generated from the production of hydrocarbon energy resources is emblematic of the circumstances which precipitate a "Resource Curse". To combat this potential threat, the country should diversify its economic activities; such a response has already been witnessed to an extent through the government's intensification of its efforts at diversification. Correspondingly, the establishment of the Qatar Investment Authority, the encouragement of other financial sectors, and the central thrust of this very research, namely, the transformation of Qatar into a KBE all exist as appropriate responses to the "Resource Curse".

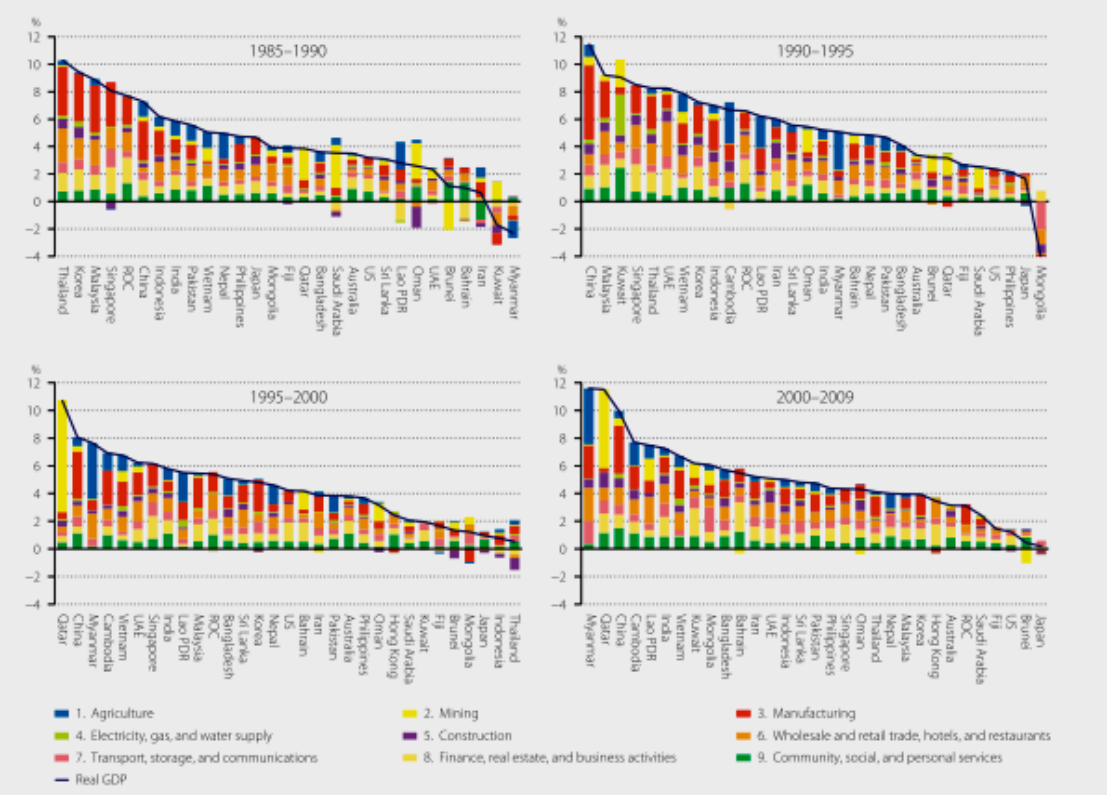
Figure 6.18 highlights how diversification efforts for Qatar's economy have been assimilated into the country, given that from 1985 to 2000, economic growth has been predominantly provided by the mining industry. This growth is also consistent with the discovery of strategic natural gas resources between 1995 and 2000. Again referring to Figure 6.18, the adjacent panel for the period from 2000 to 2009 contains evidence that Qatar's economy has started to diversify and has been successful in its labours. For although the mining industry and revenue from the production of hydrocarbon energy resources constitutes the main spur to economic growth in Qatar, almost half of the remaining figure is fulfilled by other sectors during this most recent period, notably agriculture, manufacturing, tourism, and transport.

Relatively successful diversification does not necessarily mean a sound economy protected from all risks and guaranteed to transform into a KBE since Qatar is still subject to some economic weaknesses.

Inflationary pressures within Qatar's economy represent the first of these weaknesses, as the government has, in recent years, increased public sector wages significantly. A

consequence of these increases, coupled with the effects of aggressive capital and infrastructure projects, is then the aforementioned inflationary pressures, which dictate that the country's fiscal policy must maintain a careful balance between spending on infrastructure, to sustain non-inflationary growth, and saving and investing hydrocarbon surpluses abroad in order to generate sufficient income to finance future budgets.

Figure 6.18: The Industry Origins of Economic Growth, 1985-2009
(Annual GDP Growth at Constant Prices)



Source: Asian Productivity Organization, Asian Productivity Outlook (2012)

A similar issue is echoed by the suggestion that the Qatar Central Bank (QCB) should maintain its policy of driving out short-term speculative inflows and absorbing structural liquidity to achieve greater financial stability. These evaluations of the banks' soundness indicate that the QCB should closely monitor the financial sector and, despite encouraging long-term FDI in this area, it should not hesitate to close opportunities for short-term speculative portfolio investments.

Developing a more formal and transparent macro-prudential policy framework, in relation to the definition of objectives, the elaboration of analytical methods, and the

policy toolkit, would allow Qatar to provide a swift response where and when it was necessary. This proposed development, combined with the construction of a sound financial system, will also improve Qatar's economic transparency, helping it attract the long-term FDI which is required for the transfer of knowledge essential to the maintenance of a successful KBE.

Finally, Qatar's efforts to strengthen its financial sector appear to be paying off, as confidence in the country's financial markets moved from the eightieth position to the forty-fourth in 2012, yet the legal rights of borrowers and lenders still remain under protected (99^{th}), leaving space for further improvements.

Qatar's 'pillar' for ICT also requires some significant improvement before it is able to attain its long-term goal. Despite government efforts, internet penetration throughout Qatar's economy is not at an ideal level; several factors can be attributed to this low level of penetration: the lack of investment in both general infrastructure and the Internet itself; insufficient competition in the provision of electronic communications networks, products, and services; insufficient government use of e-services; the low quality of local content; and, poor computer literacy. To enhance e-commerce and improve the competitiveness of the economy, Qatar must increase internet penetration among low-income and regional groups, where usage is marginal. With the support of the government, Qatar has considerable ICT capability, but the worsening global telecommunications climate may threaten this source of exports. The traditional arrangements of the ICT sector are unlikely to prosper in an open and competitive telecommunications market. Consequently, the government must reassess the nature of the ICT infrastructure and industry within Qatar as it progresses towards a KBE.

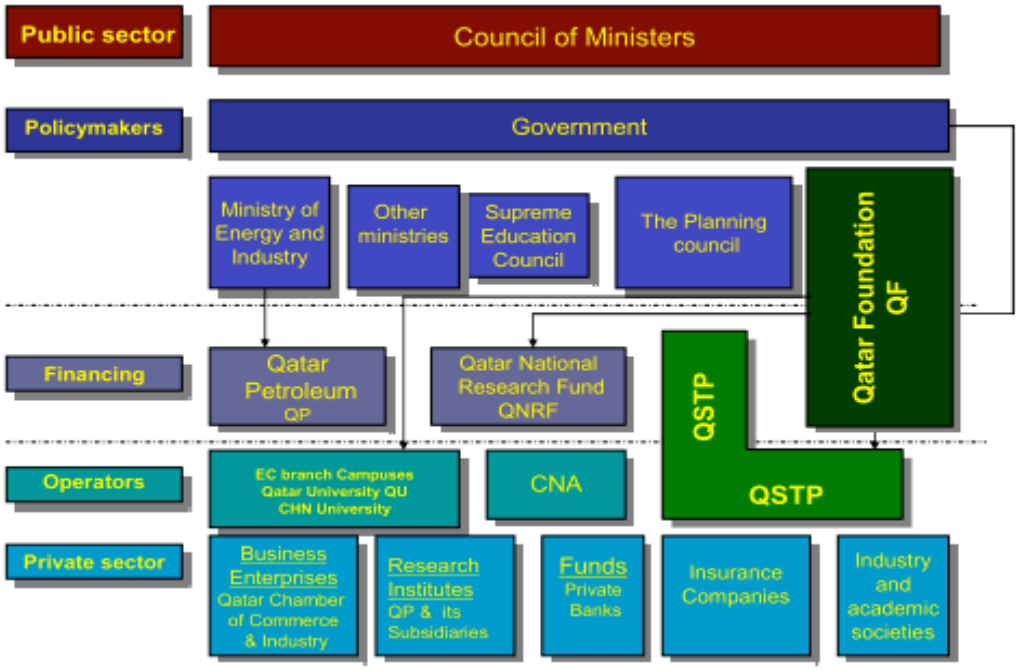
The government could stimulate domestic demand for ICT products and services by lifting its restrictions on ICT business, trade, investment, and consumption; a large area of demand could similarly be accessed through the amelioration of ICT within the educational system.

With regard to the innovation aspect of a successful KBE, Qatar also requires improvements in some key areas. For example, it would benefit from measures specifically directed towards SMEs, such as the competitively allocated partial matching financing of contracts made with universities or laboratories or international

counter parties, also could encourage the development of the vital relationship of industry with research bodies and encourage the required knowledge transfer.

FDI is needed on a much larger scale in Qatar as a source of new technologies and knowledge, but it is equally important that Qatar facilitates the transfer of technology from foreign firms to domestic ones, as the country has the financial sources to be able to transfer technology. Correspondingly, the appropriate technical support should be provided for the Qatari suppliers of components and materials. Legal assistance is equally important within this context, especially in the areas of technology licensing and intellectual property protection and acquisition.

Figure 6.19: Qatar's Innovation Policy



Source: Qatar Planning Council (2007)

There is a need to enlarge the innovation policy constituencies in the government and in both business and local communities. In its current form, Qatar's innovation policy relies too heavily on the government and the role of the private sector is rather insignificant, as depicted in Figure 6.19. Finland provides an ideal model for the promotion of innovation, operating a Science and Technology Policy Council led by the Prime Minister and which also includes the key ministers for education, finance,

labour, and industry; these central figures are further accompanied by representatives from the main business, trade, and labour associations. A similar structure in Qatar could play a key part in directing the national innovation system, hence influencing the overall development of the country itself (World Bank, 2004).

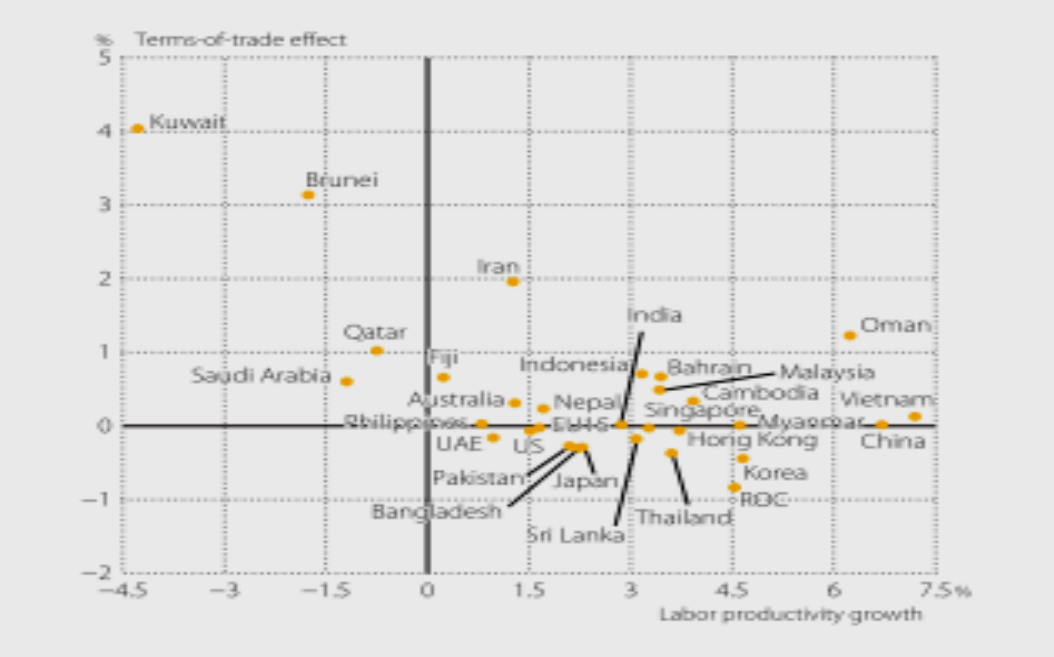
The last 'pillar' of the KAM framework, specifically, that which deals with education policies, is also subject to certain key weaknesses that exist in the education system itself and that ultimately have consequences for the development of labour and productivity. Thus, the education system is outdated and unlikely to witness any major improvement in the short-term.

Further, when the trading gain is highly favourable, it can breed complacency and productivity performance can suffer as a result. Resource-rich economies are susceptible to this potential scenario as they are poised to reap lucrative trading gains when commodity prices turn in their favour over a prolonged period of time. A country's currency is consequently pushed up by the commodity boom, making other parts of its economy less competitive and thereby potentially increasing the country's dependence on its natural resources; this abundance of resources can easily lead to resource dependence and even to the 'Resource Curse'.

Even though, Qatar has only in its labour market been prone to the 'Resource Curse', the pace of increase in the productivity of labour force in recent years has declined. As is illustrated by Figure 6.20, Qatar's economic growth has been mainly based on surpluses from the trading of hydrocarbon energy resources. During this period of trading, a false sense of confidence negatively affected the development of labour markets, especially in terms of education.

In the light of these findings, it should be noted that broad and robust productivity growth, combined with the diversification of industry, offers a means to counteract the 'Resource Curse'; Bahrain and Oman have shown some success in the adoption of this method, as is later evidenced by (Asian Productivity Organisation, 2012). Crucially, as commodity prices rise, they can also fall again in a similar fashion; it is at such moments that the real income growth of a country could suffer if the fundamentals for real GDP growth are weak.

Figure 6.20: The Terms of Trade Effect and Labour Productivity Growth, 1970–2010



Source: Asian Productivity Organisation, Asian Productivity Outlook (2012)

Manufacturing employment in Qatar is increasing, but it is unable to keep pace with the rise in manufacturing value-added. The service and construction sectors are absorbing much of the migrant labour coming into Qatar, but this in turn limits the employment possibilities for the vulnerable group of unskilled adults who possess only a basic education.

The skills required by a KBE are not sufficient to meet current demand, especially given the rapid pace of technological change. Not only does Qatar's level of technical expertise need to be bolstered in the fields of science and engineering, but technical training also implicitly fails to meet the requirements of industry. If Qatar is to compete in a KBE environment, it must continually upgrade the skills of its work force. Financial incentives and other similar methods of acquiring support should be employed to encourage both individuals and enterprises to invest in training programs; these rewards could include tax incentives for enterprises, targeted incentives to stimulate the development of public and private educational service providers, and special initiatives to promote training by SMEs in both the formal and non-formal sectors.

To take full advantage of FDIs, Qatar should ensure that it is ready to respond quickly to any emerging demand for skilled labour, with the appropriate training, education and work experience.

Finally, Qatar's labour force is responsible for the lowest share of female employment in the total employment values from the members of the Asian Productivity Organisation (Asian Productivity Organisation, 2012). To transform into a KBE and to be successful in this new economic climate to the best of its ability, Qatar must thus encourage the education, training, and employment of a female labour force.

6.10. CONCLUSION

Qatar has enjoyed strong macroeconomic performances in recent years and it has become one of the most prosperous countries in the world. This success is somewhat tempered by having its source in the increasing revenues coming from the export of hydrocarbon energy resources, which thus exposes the country to the infamous 'resource curse'. Being aware of these risks, the government of Qatar has sought alternative forms of revenue and has declared its intention to transform the current economy into a KBE, which will not only create new knowledge, but will also develop it into an innovation with economic value. The subsequent dissemination of these innovations will improve the knowledge base of the economy, as this knowledge is transferred through education and training, thereby ultimately promoting the diffusion and usage of technology.

Despite the resolute intentions and support of the government, Qatar has been susceptible to some weaknesses and experienced problems in its endeavours to complete the transition into a successful KBE. Responding to these endeavours, this paper attempts to fill an important gap and offer a detailed overview of Qatar's current economy via the framework of the World Bank's Knowledge Assessment Methodology. From this framework, the central "four pillars" necessitated by a KBE have been examined in terms of Qatar's economic performances. These 'four pillars', consisting of economic incentives, ICT, innovation, and education, have illuminated the strengths and weaknesses of Qatar's efforts towards becoming a KBE. What is apparent from these results is that although a rising economic power, Qatar still has a lot to do, not only to assume, but also to maintain, the status of a KBE. Such analysis,

based on these strengths and weaknesses, has, moreover, attempted to suggest further improvements that could be made to Qatar's economy, indicating alternative solutions to address these issues.

The economic framework of Qatar ultimately requires greater openness and transparency, so as to attract the FDIs subsequently required for the transfer of knowledge and technology. ICT usage and literacy should be both expanded and encouraged, especially in schools and through education programmes. With regard to the innovation aspect of Qatar's 'four pillars', this too requires greater transparency and the establishment of better connections between the private and the public sector, academia, and foreign firms. As this innovation framework becomes more open it should consequently offer a more encouraging vision for prospective SMEs. Finally, the efforts to reform the education system, should be continued, if not intensified, in order to create the necessary labour force needed to achieve and maintain the status of a KBE.

Chapter 7

SEARCHING PERCEPTIONS ON THE ASPECTS OF TRANSFORMING QATAR INTO A KBE: DECSRIPTIVE FINDINGS FROM THE QUESTIONNAIRE SURVEY

7.1 INTRODUCTION

This chapter aims to present the findings from the survey, the details of which were revealed in Chapter 4. As that survey was directed at university students in Qatar with the objective of assessing their awareness of the issues that surround the notion of a KBE, it is thus possible to analyse the government's efforts towards such an economic transformation.

Employing statistical software such as SPSS, the data collected through the questionnaire was assessed using descriptive analysis to locate frequencies and calculate mean values in order to present a primary overview of the results, which are also known as the preliminary findings. This is an initial process before its extension into more sophisticated models of calculation and deduction, which will be illustrated in the next chapter.

The structure of this chapter, however, follows that of the questionnaire. The findings generated from the SPSS software on frequency distributions are organised into tables and the frequencies and mean values are reported throughout this chapter in relation to the relevant tables. The concluding remarks provided at the end of this chapter will summarise the descriptive findings derived from the questionnaire.

7.2 THE DEMOGRAPHIC PROFILE

This section outlines the demographic profile of the participants from the survey, focusing on the categories of 'gender', 'age', 'faculty of study', 'degree', 'marital

status', 'nationality', 'ethnicity', and finally 'social class'. The findings from the demographic profile can be found in Table 7.1.

Table 7.1: Demographic Profile

Variable Group	Frequency (Valid)	% (Valid)
Gender		
Male	91	63.6
Female	52	36.4
Age		
18-21	87	60.8
22-25	46	32.2
26-30	10	7.0
30-40		
40+		
Faculty of Study		
Art and Science	39	27.3
Business & Economics	32	22.4
Education		
Engineering	56	39.2
Law	5	3.5
Pharmacy	2	1.4
Shari'ah	3	2.1
Sport Science		
Other	6	4.2
Degree at University		
Undergraduate	133	93.7
Master	5	3.5
Doctorate	4	2.8
Marital Status		
Single	133	93.0
Married	9	6.3
Divorced	1	.7
Nationality		
Qatari	62	43.4
Other	81	56.6
Ethnicity		
Arab-Qatari	61	42.7
Arab-Non-Qatari	67	46.9
Others	15	10.5
Class		
Upper class	12	8.5
Upper middle-class	37	26.2
Middle-class	82	58.2
Lower middle-class	5	3.5
Working class	5	3.5

As depicted by Table 7.1, the majority of the participants taking part in the survey were male, with a frequency of 63.6%, whereas the female frequency was 36.4%. These figures thus reflect the presence of gender bias in Qatar's public sphere; for despite having 'opened', Qatari society, akin to other GCC societies, remains male-dominated.

With regard to the groupings for the age of the participants, 60.8% of them were classed as 18-21, 32.2% were defined as 22-25, and 7% were within the bracket for 26-30. The sample also randomly included some mature students. Although the survey considered the age groups for participants under the label of 30-40 and for those at 40+, none of the sampled students ultimately fell into those groups. The mean value calculated from these results was 1.4615, indicating that the median value is correspondingly somewhere between the age groups of 18-21 and 22-25.

Further, as can be seen from Table 7.1, the category for faculty of study, within which the students were situated, combined with that for the level of degree which they were pursuing, produced some interesting results. Most of the students who were interviewed belonged to the Faculty of Engineering (39.2%), followed by the Faculty of Art and Science (27.3%); members of the Faculty of Business and Economics (22.4%) ranked last in this category. The mean value calculated was 3.0280. Indeed, according to these findings, the majority of participants were enrolled on an undergraduate course (93.7%) and only 3.5% were on a taught postgraduate course; 2.8% of the participants were similarly found to be pursuing a doctoral programme. The mean value calculated was 1.0769.

For the personal circumstances of the participants, the findings in Table 7.1 indicate that 93% of the students were single, 6.3% were married, and 0.7% was classed as divorced. In terms of nationality, Table 7.1 also reveals that 43.4% of the participants were Qatari and 56.6% were non-Qatari, implying that international students held a slight majority in the sample. Ethnic composition was equally diverse among the students, with 42.7% of Qatari ethnicity, 46.9% of Arab-non-Qatari ethnicity, and 10.5% were from other, non-Arab ethnic groups. The mean value was 1.6783.

When examining the category of class[1], Table 7.1 indicates that 8.5% of the participants were from the upper class, 26.2% were from the upper middle class, 58.2% were from the middle class, 3.5% were from the lower middle class, and 3.5% were also from the working class. The mean value was 2.6738. This result directly correlates with those for the nationality and ethnicity categories, as students from an

[1] It should be noted that 'class' in this study refers to 'income group' rather than social class in the Eurocentric sense.

international background mostly fell either into the middle class or into the lower classes.

7.3 THE PERCEPTIONS ON QATAR'S ECONOMY AND THE NEED FOR CHANGE

This section presents the descriptive analysis results from the questionnaire data in relation to the participants' perceptions of Qatar's economy, focusing on such issues as: Qatar's economic performance; the productivity of the economy beyond oil and gas; and, whether Qatar's economy has diversified into financial and monetary fields. The findings in this section are expected to locate the KBE issues within a larger context through the perceptions of the participants. The results are presented in Table 7.2.

As can be seen from Table 7.2 on the statement that 'Qatar's economic performance has been excellent', 5.6% of the participants strongly disagree with this suggestion. Alternatively, 47.6% of participants agree and, in addition, 35% strongly agree with this assertion. Consequently, a total of 82.6% of the participants expressed strong confidence in the economic performance of the country, which is further evidenced by the mean value of 4.0350.

Reflecting on the political economy nature of the country, the participants were also asked to offer their opinion in relation to the statement that 'The Qatari economy is an oil-based *rentier*[2] economy'. The findings in Table 7.2 show that 47.5% agreed with this assertion, whereas only 3.5% of participants strongly disagreed. In total, 73% of the sample agreed with the *rentier* nature of the country. When considering that about 82% of the sample in the previous statement believed in the strong economic performance of the country, 73% of the sample identifying the *rentier* state brings the 'excellent performance' of the country into question, as it seems to be an induced performance.

[2] In this study, 'rentier', 'rentier nature' and 'rentier mentality' refers to Beblawi's (1987) definition, according to which rentier economy is not a productive economy but rather distributes the resources of the country to general public in different level and different amount and through various ways. The features of a rentier state are: (i) there is a reliance on substantial external rent; (ii) the rent accrues directly to the government, and (iii) "only a few are engaged in the generation of this rent (wealth), the majority being involved in the distribution or utilisation of it" (Beblawi, 1987: 51-52). Such features directly refer to the nature of the Qatari economy and society, and therefore, the government policies aim at diversifying the economy to overcome the rentier economy and mentality in the society.

Extending the analysis on the performance and *rentier* nature of the economy, the participants were also asked to reflect on the statement that 'The Qatari economy is a productive economy beyond oil and gas export'. As the findings in Table 7.2 show, 35% of the participants did offer agreement and 22.9% of them even strongly agreed with this statement. Thus, 57.9% of the participants agreed with this statement on different levels; the mean value of 3.5 is a further indication of this modest support. The proportion of the participants who hold the opinion that Qatar's economy is mainly dependent on oil and gas (25%) should also be analysed; for even though it does not contradict the opinions expressed on the 'excellent performance of the country', it still has certain ramifications for the nature of that the performance.

There are indications in Table 7.2 that the participants believed that 'Qatar's economy is financialised and monetised', rather than functioning as a productive economy. Further, the results show that 43.7% of the participants agreed and that 17.6% strongly agreed with this suggestion, coming to a total of 51.3%. 9.1% of the participants strongly disagreed and disagreed; 29.6% of those questioned remained neutral. The mean value here is 3.6620, thereby denoting a slight inclination towards a position of agreement.

With regard to the challenging proposition that 'The Qatari economy is faced with the difficulty of developing a productive economy in a country that is geographically small', 23.1% registered their agreement, whereas 37.1% disagreed with this statement; 28% of participants remained neutral. The neutral position should, perhaps, be considered as an unexpressed agreement. In addition, 35% of participants agreed and strongly agreed with this statement. For the neutral position, the majority can be considered to be in favour of the statement in terms of recognising the challenges faced by Qatar. The mean value is 3.0280.

The two final questions in Table 7.2 emphasise alternative ways of developing wealth: the first looks at Qatar's investing in other countries as FDI. The results show that 65.8% of the participants both agreed and strongly agreed with this proposition, yet 14.7% of the participants strongly disagreed or disagreed with it. It seems that Qatar's current strategy of investing outside the country has the approval of the participants, with the mean value of 3.6783 providing evidence to support this supposition.

Table 7.2: Perceptions on Qatar's Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatar's economic performance has been excellent:					
Strongly disagree	8	5.6			
Disagree	4	2.8	4.0350	2	1.03061
Neutral	13	9.1			
Agree	68	47.6			
Strongly agree	50	35.0			
Qatari economy is an oil-based *rentier* economy:					
Strongly disagree	5	3.5			
Disagree	10	7.1	3.8440	3	1.00202
Neutral	23	16.3			
Agree	67	47.5			
Strongly agree	36	25.5			
Qatari economy is a *productive* economy beyond oil and gas export:					
Strongly disagree	7	5.0			
Disagree	29	20.7	3.5000	6	1.19652
Neutral	23	16.4			
Agree	49	35.0			
Strongly agree	32	22.9			
Qatari economy is a *financialised* and *monetarised* economy:					
Strongly disagree	5	3.5			
Disagree	8	5.6	3.6620	5	.95195
Neutral	42	29.6			
Agree	62	43.7			
Strongly agree	25	17.6			
Qatari economy is faced with the difficulty of developing a productive economy as country is geographically small:					
Strongly disagree	10	7.0	3.0280	7	1.13797
Disagree	43	30.1			
Neutral	40	28.0			
Agree	33	23.1			
Strongly agree	17	11.9			
Qatar should continue invest through foreign direct investment in other countries to provide sustainable economy:					
Strongly disagree	11	7.7	3.6783	4	1.14819
Disagree	10	7.0			
Neutral	28	19.6			
Agree	59	41.3			
Strongly agree	35	24.5			
Qatari economy should invest in technologically innovative projects:					
Strongly disagree	2	1.5			
Disagree	4	2.9	4.0803	1	.95531
Neutral	33	24.1			
Agree	40	29.2			
Strongly agree	58	42.3			

The last question focuses on sustaining Qatar's wealth in the future through the development of a KBE, with Qatar investing in technologically innovative projects. The findings in Table 7.2 show that 42.3% of the participants strongly agreed and 29.2% of them agreed, thereby totalling approximately 70% of the participants. This is an initial indication that there is an understanding of, and support for, a KBE in Qatar; such a suggestion is reiterated by the mean value of 4.0803 here.

When assessing these issues in detail, an attempt was also made to develop some critical perspectives from the participants on the nature of the Qatari economy and to identify if there is support for change. Table 7.3 thus presents the results for the queries on whether Qatar's economy is innovative or not, whether enough monetary resources are spent on research and development, and whether structural changes are needed by the economy for progression to occur. Another question analysed here is whether Qatar needs to diversify and improve its human development levels. The participants in Table 8.3 showed a clear interest in questions on investment for research and development and on the changes that Qatar needs to undergo, indicating their concern and enthusiasm for Qatar's development.

As is evidenced by the findings in Table 7.3, 31.5% of the participants disagreed and 7.7% strongly disagreed with the assertion that 'Qatar is not an innovative economy'. 21% of the participants, alongside another 7.7% (who strongly agreed), also favoured this statement.. Comparatively speaking more participants thus rejected this statement. The neutrality of 32.2% of the participants can, perhaps, be considered as concealing a critical yet silent mass towards the Qatari economy, in the sense that their position may be perceived as in agreement. Following the distribution of these extra figures, the majority would then be shown to support this statement, which would imply that the KBE status of Qatar is not convincing. The mean value of 2.8951 similarly offers no definitive position.

As the KBE relies heavily on research and development expenditures, the participants were questioned about Qatar's position on this situation through the proposal that 'The Qatari economy does not spend enough on research and development'. The findings in Table 7.3 depict that 50.4% of the participants in strong disagreement with this statement, since only 27.5% of the participants showed support. These results are closer to the findings established for the previous statement; hence, there is a

consistency in the responses. Again, the presence of 21.1% of the participants in a neutral position suggests an underlying inclination towards agreement. The mean value for this is established at 2.60 and thus closer to the neutral position.

Table 7.3: Perceptions on Qatari Economy and Need for Change

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatari economy is not an innovative economy:					
Strongly disagree	11	7.7			
Disagree	45	31.5	2.8951	5	1.06621
Neutral	46	32.2			
Agree	30	21.0			
Strongly agree	11	7.7			
Qatari economy does not spend enough for research and development:					
Strongly disagree	34	23.9			
Disagree	39	27.5	2.6056	6	1.27139
Neutral	30	21.1			
Agree	27	19.0			
Strongly agree	12	8.5			
Qatari economy is not doing well and needs change:					
Strongly disagree	27	19.0			
Disagree	55	38.7	2.5352	7	1.17698
Neutral	27	19.0			
Agree	23	16.2			
Strongly agree	10	7.0			
Qatari economy needs to go through structural change:					
Strongly disagree	14	9.9			
Disagree	34	23.9	3.070	4	1.1525
Neutral	35	24.6			
Agree	46	32.4			
Strongly agree	13	9.2			
Qatari economy has to diversify in order to remain a competitive economy:					
Strongly disagree	3	2.1	3.5634	2	.93372
Disagree	13	9.2			
Neutral	49	34.5			
Agree	55	38.7			
Strongly agree	22	15.5			
The long-run solution is to be become innovation based knowledge economy:					
Strongly disagree	4	2.8			
Disagree	5	3.5	3.7746	1	.96311
Neutral	46	32.4			
Agree	51	35.9			
Strongly agree	36	25.4			
Performance of the economy is well but human development scores are worrying:					
Strongly disagree	7	4.9	3.5455	3	1.07943
Disagree	18	12.6			
Neutral	34	23.8			
Agree	58	40.6			
Strongly agree	26	18.2			

In response to the proposition that 'The Qatari economy is not doing well and needs to be changed', the majority of the participants expressed (in Table 7.3) that Qatar is doing well, with 38.7% disagreeing' and 19% disagreeing, thereby creating a total of 57.7% in disagreement. Ultimately, however, a total of 23.2% of the participants supported the need for change in the economy.

The participants were also asked to express their opinion on the proposal that 'The Qatari economy needs to go through structural change'; as is subsequently depicted in Table 7.3, 41.6% of the participants agreed and strongly disagreed with this statement. A total of 33.8% of the participants objected to this statement; 24.6% of the participants did, however, remain neutral. These results emphasise a diversity of opinions in Qatari society over the debate on structural changes.

As is illustrated by the results in Table 7.3, there was consensus on the need for the economy to diversify so as to remain competitive in the long-term, with 38.7% of participants agreeing and 15.5% of them strongly agreed. Some 11.3% of the participants did, however, remain in opposition to this proposition, thus indicating that a comparatively larger portion of the participants favours the diversification of the economy. This suggestion is tempered by the presence of 34.5% of the participants in a neutral position. If this figure represents the critical individuals, then an even larger percentage of the participants would be in favour of change.

In response to the emphasis that a KBE offers the best solution for Qatar's economy, the results in Table 7.3 indicate that the participants were enthusiastic about the need for Qatar to evolve into a KBE, with 65.3% of them agreeing or strongly agreeing. Opposition to this suggestion is only at 6.3%, whereas 32.4% of participants declared themselves as neutral on this topic. The mean value of 3.77 illustrates an overall support for this statement.

For the last proposition within this section, the participants expressed their sentiments towards human development in Qatar. Indeed, as the results indicate, 58.8% of the participants were in agreement, yet only in total 17.5% disagreed. The 23.8% located under the neutral position should, however, be considered in agreement, as the participants may have attempted to hide their critical position.

Ultimately, the participants are mostly happy with the performance of the economy, but they are also still in favour of change for the prospect of a better future.

7.4 THE PERCEPTIONS ON KNOWLEDGE AND THE KBE

This section aims to examine the perceptions of the participants towards knowledge and the KBE in general. If Qatar is intends to become a KBE, it is essential that university students should have some awareness of the nature of a KBE and the unique strain of knowledge that it requires. The findings for this section are presented in Tables 7.4a and 7.4b. Table 7.4a provides a general framework for the issues surrounding a KBE, with generic questions touching on whether knowledge can be considered as an economic good or commodity and on the role of knowledge in the generation of wealth and productivity. It should be noted that for each statement in Table 7.4a, the neutral position remains rather high. This can be interpreted as a sign that a substantial number of participants were not well aware of knowledge-related issues. Qatar's transformation into a KBE is, however, brought into question by this discovery.

What emerges from Table 7.4a is that 66.5% of the participants agreed and strongly agreed with the notion that 'Knowledge can be classed as an economic product'; in comparison, only 11.2% of the participants offered any objection. The mean value of 3.74 here is an indication of the support for this statement.

Regarding the statement that 'The KBE is based on the generation and exploitation of knowledge playing a predominant part in the creation of wealth', the results in Table 7.4a emphasise that 63% of the participants agreed and strongly agreed on knowledge's pivotal function in the creation of wealth.

Equally, 64.1% of the participants agreed and strongly agreed that 'A KBE represents the exploitation of all types of knowledge in all forms of economic activity'. An indication of this support is also seen through the mean value of 3.65 and the level of disagreement at only 11.2%.

The findings in Table 7.4a also show that a total of 52.8% of the participants both agreed and strongly agreed with the declaration that 'A KBE is not just a description of high tech industries'. The total for those participants who did not agree with this

notion was only 14.1%. Due to the influence of a high number of neutral cases (33.1%), the mean is 3.51, thereby inclining somewhat towards the position of agreement.

Table 7.4a: Perceptions on Knowledge and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Knowledge can be considered as an 'economic good:					
Strongly disagree	12	8.4			
Disagree	4	2.8	3.7413	4	1.14273
Neutral	32	22.4			
Agree	56	39.2			
Strongly agree	39	27.3			
Knowledge economy is based on the generation and exploitation of knowledge to play the predominant part in the creation of wealth:					
Strongly disagree	6	4.2	3.7023	6	1.09677
Disagree	14	9.8			
Neutral	33	23.1			
Agree	51	35.7			
Strongly agree	39	27.3			
Knowledge economy is about the most effective use and exploitation of all types of knowledge in all manner of economic activity:					
Strongly disagree	6	4.2	3.6549	7	.98244
Disagree	10	7.0			
Neutral	35	24.6			
Agree	67	47.2			
Strongly agree	24	16.9			
The idea of the knowledge driven economy is not just a description of high tech industries:					
Strongly disagree	5	3.5	3.5141	9	1.00167
Disagree	15	10.6			
Neutral	47	33.1			
Agree	52	36.6			
Strongly agree	23	16.2			
Knowledge economy describes a set of new sources of competitive advantage which can apply to all sectors, all companies and all regions:					
Strongly disagree	3	2.1	3.7606		.98160
Disagree	11	7.7		2	
Neutral	38	26.8			
Agree	55	38.7			
Strongly agree	35	24.6			
Knowledge economy describes the new emerging economic structure and the future shape of the economy:					
Strongly disagree	2	1.4	3.7254	5	.96127
Disagree	13	9.2			
Neutral	39	27.5			
Agree	56	39.4			
Strongly agree	32	22.5			

With regard to the suggestion that 'A KBE describes a set of new sources of competitive advantage which can apply to all sectors, companies, and regions', 63.6% of the participants expressed their agreement.

As is evidenced by the figures associated with the final statement in Table 7.4a, a total of 61.9% of the participants both strongly agreed and agreed that a KBE signals the emergence of new economic paradigms and structures in society, rather than favouring a reductionist understanding that it involves increasing levels of knowledge in the economy. Support for this statement is illustrated by the relatively high mean value of 3.7254, even though 27.5% of the participants remained neutral.

To enquire further about issues surrounding KBEs, participants were provided with another set of proposals on a KBE and its management. From the results attributed to the first statement in Table 7.4b, it is evident that 66.7% of the participants (at a mean value of 3.7589) agreed and strongly agreed with the notion that 'A KBE signifies more than just increasing investment in research and development'.

In an attempt to investigate the participants' understanding of a KBE, they were given a confusing proposition that differed to previous statements: 'The KBE is the new conceptual fame'. 55.7% of the participants thus agreed and strongly agreed with this statement, yet 17.6% of them disagreed on this point. Despite the higher percentage being in overall support of the proposition, it is, however, still lower than other figures for support. Consequently, this disparity suggests that some of the participants perceived the confusion inherent within this statement.

For the following statement from Table 7.4b, the participants did not agree with the notion that 'Knowledge is for technologically advanced countries, but it can also be developed in less technologically advanced nations', since 47.9% of them rejected this proposition. 28.8% of participants, however, attributed the status of a KBE with the developed and industrialised nations.

Participants were similarly confronted with the statement that 'The KBE is solely linked to technological development'; 49.3% of the participants disagreed or even strongly disagreed with this statement, rejecting the reductionist approach to the idea of the KBE. Although in comparison, some 22.5% of the participants both agreed and

strongly agreed with the statement associating the KBE with technological development alone.

Table 7.4b: Perceptions on Knowledge and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
The knowledge society is a larger concept than just an increased commitment to Research & Development:					
Strongly disagree	4	2.8	3.7589	3	1.10777
Disagree	20	14.2			
Neutral	23	16.3			
Agree	53	37.6			
Strongly agree	41	29.1			
In knowledge economy, knowledge represents the heart of value added from high tech manufacturing and ICTs through knowledge intensive services to the overtly creative industries such as media and architecture:			3.5461		.95793
Strongly disagree	4	2.8		8	
Disagree	13	9.2			
Neutral	48	34.0			
Agree	54	38.3			
Strongly agree	22	15.6			
Knowledge economy is the new conceptual fame:					
Strongly disagree	4	2.8			
Disagree	21	14.8	3.4718	10	.97989
Neutral	38	26.8			
Agree	62	43.7			
Strongly agree	17	12.0			
Knowledge economy is only for the technologically developed countries:					
Strongly disagree	22	15.5			
Disagree	46	32.4	2.7324	12	1.18451
Neutral	33	23.2			
Agree	30	21.1			
Strongly agree	11	7.7			
Knowledge economy is *only* related with technological development:					
Strongly disagree	7	4.9			
Disagree	63	44.4	2.7465	11	.99955
Neutral	40	28.2			
Agree	23	16.2			
Strongly agree	9	6.3			
Knowledge is the new source of economic value and growth:					
Strongly disagree	1	0.7			
Disagree	12	8.9	3.7926	1	.93119
Neutral	33	24.4			
Agree	57	42.2			
Strongly agree	32	23.7			

When investigating whether the participants of the survey understood the value-added nature of a KBE, their opinions were requested on the suggestion that 'Knowledge is

the new source of economic value and growth'. Indeed, the results in Table 7.4b demonstrate that 65.7% of the participants agreed with this idea and only 9.6% of them rejected the notion. It can therefore be claimed that most of the participants from the questionnaire are aware of the potential contribution provided by a KBE. The mean value of 3.8% is then a clear indication of this awareness. From the results, it is further apparent that the participants were aware of both the breadth and depth of the concept of a KBE, appreciating the various forms and dimensions it can take.

7.5 THE PERCEPTIONS ON QATAR AS A KBE

This section aims to discuss the findings from the primary data analysis in relation to the participants' perceptions of Qatar as a KBE.

The first statement in this section sought to measure participants' reactions to the notion that 'Qatar must develop a KBE to remain globally competitive'. From the results in Table 7.5a, 70.4% of the participants agreed and strongly agreed with this proposal, while only 11.9% of them opposed it. The mean value of 3.88 here emphasises the strong support given to proposed transformation of Qatar into a KBE.

With regard to the statement that 'A KBE strategy could overcome Qatar's problem of being a non-productive economy', the results in Table 7.5a show a similar result, since 65.2% of the participants agreed and strongly agreed with this theory, yet only 12.7% of the participants objected to the potential benefit of a KBE for Qatar.

Reflecting on the future of Qatar as a KBE, 67.4% of the participants recognised the validity of the statement that 'The status of a KBE best describes the new and emerging economic structure and future shape of Qatar'. Indeed, this is evidenced by the predominance of agreed and strongly agreed positions taken by the participants. Those participants in disagreement only comprised 12.8% of the sample group. A mean value of 3.7 confirms the substantial agreement registered for the suggestion in question and it further indicates an overall recognition of the positive contribution made by a KBE, both in general and for Qatar.

In the context of Qatar's need for economic diversification, the participants of the survey were invited to express their thoughts on the following assertion: 'The development of a KBE is the only way for Qatar to survive and attain a sustainable

economy'. The participants did not show the same degree of support for this statement as they had done for others, since they did not seem to consider Qatar to be in such a desperate situation that only a KBE could provide help. As can be seen from the results in Table 7.5a, the support dropped to 41.6%, whereas 26.7% of the participants rejected this statement. 31.7% of the participants also opted to stay neutral, which perhaps should be considered as another, underlying form of agreement.

Table 7.5a: Perceptions on Qatar and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean ranking	Standard Deviation
Qatar must develop a knowledge economy to remain globally competitive:					
Strongly disagree	7	4.9	3.8873	1	1.11787
Disagree	10	7.0			
Neutral	25	17.6			
Agree	50	35.2			
Strongly agree	50	35.2			
Knowledge economy strategy can overcome Qatar's problem of being a non-productive economy:					
Strongly disagree	2	1.4	3.6972	3	.94523
Disagree	16	11.3			
Neutral	31	21.8			
Agree	67	47.2			
Strongly agree	26	18			
Knowledge economy describes the new emerging economic structure and the future shape of the economy for Qatar:					
Strongly disagree	1	0.7	3.7092	2	.91448
Disagree	17	12.1			
Neutral	28	19.9			
Agree	71	50.4			
Strongly agree	24	17.0			
Developing knowledge economy is the only way for Qatar to survive and have a sustainable economy:					
Strongly disagree	6	4.2	3.2113	5	1.04394
Disagree	32	22.5			
Neutral	45	31.7			
Agree	44	31.0			
Strongly agree	15	10.6			
Since Qatar has to diversify its economy, the only way it can be globally strong and competitive is to develop a knowledge economy:					
Strongly disagree	3	2.1	3.4507	4	.95707
Disagree	21	14.8			
Neutral	44	31.0			
Agree	57	40.1			
Strongly agree	17	12.0			

A similar issue emerged with the last statement in this section, which proposed that 'Since Qatar must diversify its economy, the only way it can remain strong and compete on a global level is through the development of a KBE'. There were, however, different consequences in this particular case, given the distinction between the idea of survival and that of remaining strong and competitive. Compared to the previous notion, support here increased to 52.1% and the position representing disagreement decreased to 16.9% of the participants.

In this section, the participants were also presented with further questions to asses the current state of Qatar's economy in relation to the concept of a. Thus, the statements in Table 7.5b analyse the need for Qatar to develop a KBE in order to preserve its competiveness on the international stage, alongside a discussion of whether it has the capability to become a sustainable KBE in its region and on the international market.

As can be seen in Table 7.5b, 47.9% of the participants disagreed and strongly disagreed with the proposition that 'Qatar does not have a knowledge base from which to develop a KBE'. In comparison, 24.6% agreed' and strongly agreed with this statement. Hence, the majority of the participants share the opinion that Qatar has a knowledge base from which to develop a KBE.

As is revealed by Table 7.5b, 22.5% of the participants agreed and strongly agreed with the suggestion that 'Since Qatar does not have a technological base, it cannot develop into a KBE'. 44.4% of the participants, however, rejected this notion. Thus, the majority of the sample holds the opinion that Qatar has the necessary technological base for the development of a KBE.

Similar results are found in Table 7.5b for the following statement: 'Qatar does not have the necessary professional skills to become a KBE'. For 50.8% of the participants disagreed and strongly disagreed with this notion, yet 21.8% of the participants considered shortcomings in professional skills to be a barrier to Qatar's transformation into a KBE.

For the statement that 'A KBE is only one of the options for Qatar's future', the results in Table 7.5b demonstrate that 43% of the participants were in agreement with this proposition. 28.8% of the participants, however, rejected this ultimatum.

Consequently, the majority of the participants from the sample are attuned to the importance of a KBE for Qatar.

Table 7.5b: Perceptions on Qatar and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean ranking	Standard Deviation
Qatar does not have a knowledge base to develop knowledge economy:					
Strongly disagree	19	13.4			
Disagree	49	34.5	2.6831	8	1.08745
Neutral	39	27.5			
Agree	28	19.7			
Strongly agree	7	4.9			
Since Qatar does not have technological base, it cannot developed into a knowledge economy:					
Strongly disagree	22	15.5			
Disagree	41	28.9	2.6761	9	1.08862
Neutral	47	33.1			
Agree	25	17.6			
Strongly agree	7	4.9			
Qatar does not have the capacity of the necessary professional skills to become a knowledge economy:					
Strongly disagree	36	25.4			
Disagree	36	25.4	2.5070	10	1.18349
Neutral	39	27.5			
Agree	24	16.9			
Strongly agree	7	4.9			
Knowledge economy is *only* one of the options for Qatar's future:					
Strongly disagree	10	7.0			
Disagree	31	21.8	3.1831	7	1.11482
Neutral	40	28.2			
Agree	45	31.7			
Strongly agree	16	11.3			
Qatar will survive without knowledge economy:					
Strongly disagree	9	6.3			
Disagree	43	30.3	3.2113	6	4.23567
Neutral	54	38.0			
Agree	28	19.7			
Strongly agree	7	4.9			
Knowledge economy cannot bring any positive change for Qatar:					
Strongly disagree	42	29.8			
Disagree	48	34.0	2.2624	11	1.12533
Neutral	28	19.9			
Agree	18	12.8			
Strongly agree	5	3.5			

On a similar note, 36.9% of the participants rejected the assertion that 'Qatar will survive without a KBE', in comparison to the 24.6% of the sample in agreement with

the statement. This result supports the previous findings where the majority of the participants considered Qatar able to survive without a KBE.

Such a line of enquiry is further echoed by the belief that 'A KBE cannot offer any positive changes for Qatar'. As can be seen in Table 7.5b, 63.8% of the participants disagreed and strongly disagreed with this statement, and only 16.3% of the participants agreed or strongly agreed. The majority of the participants from the questionnaire are therefore aware of the positive impact a KBE could bring to the Qatari economy.

7.6 PERCEPTIONS ON ASSESSING QATARI ECONOMY AND SOCIETY'S READINESS FOR KNOWLEDGE ECONOMY

This section extends the previous analysis, investigating the participants' perceptions of the status of Qatar's economy and society in preparation for its transformation into a KBE. The results for this section are reported in Table 7.6. Thus, analysis presented in this table explores whether the economy and society of Qatar support the transition to a KBE and whether there is a social commitment towards this shift.

With regard to the suggestion that 'Qatar's economic development strategy indicates that the economy and society support the KBE', 53.5% of the participants are in agreement, believing that the economy and society have the capacity to become a KBE. Although in comparison, 19% of the participants from the survey believe otherwise. The mean value of 3.4 here points to the support for this statement.

As can be seen in Table 7.6, 50.7% of the participants agreed and strongly agreed with the statement that 'Qatar's economy and society are ready to work towards the KBE in terms of education'. Despite this majority (who consider that Qatar's educational base is sufficient to develop a KBE, 21.1% of the participants still rejected this suggestion.

For the last statement in this section, the participants expressed their opinions on the function of professional skills as social capital for the development of a KBE in Qatar. As depicted by the results in Table 7.6, 58.1% of the participants both agreed and strongly agreed with the statement in question, indicating their support for the use of

professional skills in the development of Qatar's KBE. 15.6% of the participants did not, however, agree with this suggestion.

Table 7.6: Perceptions on Qatari Society and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
The Qatari economic development strategy indicates that the economy and society supports the knowledge economy:					
Strongly disagree	11	7.7	3.4085	3	1.10547
Disagree	16	11.3			
Neutral	39	27.5			
Agree	56	39.4			
Strongly agree	20	14.1			
Qatari economy and society is ready to work towards the knowledge economy in terms of education:					
Strongly disagree	4	2.8	3.4437	2	1.06873
Disagree	26	18.3			
Neutral	40	28.2			
Agree	47	33.1			
Strongly agree	25	17.6			
Qatari economy and society is ready to work towards the knowledge economy in terms of development of professional skills:				1	
Strongly disagree	3	2.1	3.5887		1.00762
Disagree	19	13.5			
Neutral	37	26.2			
Agree	56	39.7			
Strongly agree	26	18.4			

Although there is relatively strong support for the KBE in terms of social readiness, education, and professional skills, the existence of a large number of neutral statistics for each of the listed propositions undercuts any truly conclusive results in this section.

7.7. PERCEPTIONS ON ASSESSING THE ADEQUACY OF QATARI EDUCATION FOR KBE

This section examines the participants' assessment of the Qatari education system and its qualifications in terms of its readiness for the formation of a KBE. The questions employed here focused on educational development in Qatar and the contribution of Qatari universities to knowledge and to the development of a KBE.

The findings from Table 7.7a show that 57.6% of the participants both agree and strongly agree with the idea that 'Educational development in Qatar can respond to

the demands of a KBE'. The mean value of 3.7842 further indicates confidence, among the participants, in the potential support from educational developments for Qatar's transition to a KBE. It should be noted that only 12.3% of the participants rejected the notion that Qatar's educational background is not sufficient to underpin a KBE.

Universities, and the education that they provide, constitute (in the context of this study) the central element behind the development of a KBE. The participants' views were thus explored in connection with the assertion that 'Qatar's universities provide knowledge and skills for their students'. As the results in Table 7.7a reveal, 65.3% of the participants agreed that Qatari universities are doing a good job of providing the necessary skills for their students. This weighting is also evidenced by the mean value of 3.6454. As with the results for the last statement, the statistic associated with rejection and disagreement remained at 14.9%; the participants defined as neutral similarly stayed at the figure of 19.9%. Participants consequently voiced strong support for the skills provided by Qatari universities for the development of a KBE.

The universities were perceived as providing a range of information to students, which included theoretical, empirical, and practical skills, thereby allowing the development of fully-rounded students. As shown by Table 7.7a, 57.8% of the participants agreed and strongly agreed with this idea; the mean value was 3.5634. It should also be noted that the percentage occupied by the negative responses here is 13.3%.

As the results in Table 7.7a show, 55.8% of the participants both agreed and strongly agreed with the notion that 'Universities in Qatar provide self-confidence by teaching the most contemporary knowledge'. A slightly higher percentage of participants (19.1%) did, however, reject this assertion.

Table 7.7a demonstrates that 54.2% of the participants agreed and strongly agreed with the emphasis that 'Qatari universities are research-based, contributing to knowledge development'. A total of 14.1% of the participants rejected this suggestion; the value of 31.7% for those participants who remained neutral on this topic does not help the attainment of a more conclusive result. This is evident from the mean value of 3.5.

Table 7.7a: Perceptions on Qatari Education System and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Educational development in Qatar can respond to the demand of the knowledge economy:			3.7842	1	2.66964
Strongly disagree	4	2.9			
Disagree	13	9.4			
Neutral	41	29.5			
Agree	60	43.2			
Strongly agree	20	14.4			
Qatar universities provide knowledge and skill for their students:			3.6454	2	1.09632
Strongly disagree	9	6.4			
Disagree	12	8.5			
Neutral	28	19.9			
Agree	63	44.7			
Strongly agree	29	20.6			
Theoretical knowledge is supported with empirical knowledge and practical skills in the Qatari universities:			3.5634	5	.94129
Strongly disagree	3	2.1			
Disagree	16	11.3			
Neutral	41	28.9			
Agree	62	43.7			
Strongly agree	20	14.1			
Universities in Qatar provides self-confidence through teaching the most up-to-date knowledge:			3.5603	6	1.08476
Strongly disagree	4	2.8			
Disagree	23	16.3			
Neutral	34	24.1			
Agree	50	35.5			
Strongly agree	30	21.3			
Qatari universities are research based universities contributing to knowledge development:			3.5141	7	.94333
Strongly disagree	3	2.1			
Disagree	17	12.0			
Neutral	45	31.7			
Agree	58	40.8			
Strongly agree	19	13.4			
The aim of university education in Qatar is not only graduating students but also helping them to develop skills so that they can be employable:			3.5070	8	1.18349
Strongly disagree	11	7.7			
Disagree	15	10.6			
Neutral	40	28.2			
Agree	43	30.3			
Strongly agree	33	23.2			

The active engagement of Qatar's universities with the KBE project is essential and they are expected to contribute to the process of transformation through the

development of knowledge and associated skills. This function is explored in the statement that 'The aim of university education in Qatar is not only to ensure that students graduate, but also to help them develop key skills so that they are employable'. 53.5% of the participants both agreed and strongly agreed with this statement; the percentage of the sample not in agreement was again 18.3%; those participants who remained neutral held the relatively high figure of 28.2%. 'The aim of Qatari Universities is to make students employable'; agreement for this notion was at 53.5% of the participants and the mean value was 3.5070. 18.3% of the participants did not, however, agree with this statement, as can be seen in Table 7.7a.

When further examining the quality of education in terms of the readiness of Qatar's universities for a KBE, participants were asked to offer their views on the suggestion that 'University education in Qatar helps students to develop critical thinking in any subject area'. The results in Table 7.7b thus demonstrate that 54.9% of the participants were in agreement with this statement; the mean value was also 3.6. It therefore seems that the majority of the participants believe that the universities help to harness critical thinking among students, thereby enabling them to contribute, on a practical level, to the real world. It should be noted that only 13.4% of the participants disagreed with this statement.

Similar results are found for the statement which suggests that 'Qatari universities provide their students with creative thinking skills'; 58.4% agreed with this statement and additional evidence was provided by the mean value of 3.58. 19% of the participants were, however, opposed to this statement. A clear majority of the participants therefore think highly of the creativity-oriented teaching in Qatari universities.

Alternatively, participants in the survey were questioned with regard to the following statement: 'Qatar's university education is not yet able to produce a student who can compete in the global economy'. As the results in Table 7.7b show, 33.8% of the participants were in agreement with this statement, whereas 35.9% expressed their disagreement with this topic. It should be noted, however, that 30.3% of the participants opted for the neutral option in response to this proposal; it is therefore difficult to offer a conclusive result from such limited evidence. Such a result, especially in the context of the previous reports of agreement and support, is then

rather confusing and it possibly highlights the uncertain nature of the answers provided to the questionnaire.

Table 7.7b: Perceptions on Qatari Education System and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatar's university education helps students to develop critical thinking in whatever subject they study:					
Strongly disagree	4	2.8	3.6268	3	1.04921
Disagree	15	10.6			
Neutral	45	31.7			
Agree	44	31.0			
Strongly agree	34	23.9			
Qatar's university education helps students to develop creative thinking in whatever the subject they study:					
Strongly disagree	7	4.9	3.5845	4	1.14386
Disagree	20	14.1			
Neutral	32	22.5			
Agree	49	34.5			
Strongly agree	34	23.9			
Qatar's university education is away from producing student who can compete in the global economy:					
Strongly disagree	22	15.5	2.9225	11	1.20915
Disagree	29	20.4			
Neutral	43	30.3			
Agree	34	23.9			
Strongly agree	14	9.9			
Qatar's universities produce graduates with language skills:					
Strongly disagree	6	4.3			
Disagree	23	16.3	3.4468	10	1.05170
Neutral	33	23.4			
Agree	60	42.6			
Strongly agree	19	13.5			
Educational development in Qatar can respond to the demand of the knowledge economy:					
Strongly disagree	6	4.3	3.4714	9	1.00676
Disagree	11	7.9			
Neutral	58	41.4			
Agree	41	29.3			
Strongly agree	24	17.1			

Responding to the suggestion that 'Qatar's universities produce graduates with language skills' (and as can be seen in Table 7.7b), 56.1% of the participants were in agreement with a mean value of 3.44, whereas 20.6% of the participants rejected this statement. A higher positive response was expected towards this statement, as Qatar's university system provides an effective language education.

To gain a greater overview of the situation, the participants were asked to provide their opinions on the statement that 'Educational development in Qatar can respond to the demands of a KBE'; 46.4% of the participants agreed with this notion. When placed in the context of the previous findings, this figure is lower than expected; yet the weighting for those participants who disagreed is similarly lower than that of the previous statement at 12.2%. It should also be noted that the figure for those participants who opted to remain neutral is very high (41.4%), especially in comparison to the figures for the other statements. What is then apparent is that the participants are not sure about Qatar's readiness for a KBE.

Additional evidence for the readiness of Qatar (and its economy's suitability) to become a KBE is provided by the participants' perceptions of the qualifications and experience of Qatari students as products of the Qatari education system. These results are depicted in Table 7.8, which also displays the findings for whether Qatari students are suitably equipped to meet the growing demands of the private sector.

In response to the assertion that 'The educational qualifications of Qatari students are appropriate for the needs of the private sector', the results in Table 7.8 show that 38.7% of the participants agreed and disagreed, whereas 31% rejected it; the mean value was 3. The figure for the neutral stance is equal to the other two positions (for support and rejection); such a situation prevents the attainment of any decisive conclusion.

Further, a 49.3% approval rating by the participants was bestowed on the statement, which suggests that 'If the qualifications of Qatari students are sufficient, the private sector will be willing to employ them'. 19% of the participants did, however, reject this statement. The statistic for those participants who remained neutral is still high, thereby ensuring a mean value of 3.39. An optimistic response was consequently expressed for the employability of students by the Qatari private sector.

Table 7.8: Perception on the Qualifications and Experience of Qataris for Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
The educational qualifications of Qatari students are adequate for the needs of the private sector:				6	
Strongly disagree	7	4.9	3.0704		.98678
Disagree	37	26.1			
Neutral	43	30.3			
Agree	49	34.5			
Strongly agree	6	4.2			
If the *qualifications* of the Qatari students are adequate, the private sector will be willing to employ them:			3.3944	4	.96725
Strongly disagree	3	2.1			
Disagree	24	16.9			
Neutral	45	31.7			
Agree	54	38.0			
Strongly agree	16	11.3			
Qatari students have the experience required by the private sector:			3.2394	5	.95968
Strongly disagree	5	3.5			
Disagree	28	19.7			
Neutral	46	32.4			
Agree	54	38.0			
Strongly agree	9	6.3			
If the *experience* of the Qatari students is adequate for businesses, the private sector will be willing to employ them:			3.4789	3	.83129
Strongly disagree	-	-			
Disagree	19	13.4			
Neutral	48	33.8			
Agree	63	44.4			
Strongly agree	12	8.5			
Qatari students with adequate education can have high performance in the workplace:			3.5915	2	.93895
Strongly disagree	4	2.8			
Disagree	14	9.9			
Neutral	37	26.1			
Agree	68	47.9			
Strongly agree	19	13.4			
Qatari students ready to accept any job:			2.8028	7	1.19834
Strongly disagree	25	17.6			
Disagree	33	23.2			
Neutral	39	27.5			
Agree	35	24.6			
Strongly agree	10	7.0			
Qatari students concerned with their social prestige in choosing a job:			3.6901	1	1.01885
Strongly disagree	2	1.4			
Disagree	14	9.9			
Neutral	48	33.8			
Agree	40	28.2			
Strongly agree	38	26.8			

With regard to the statement that 'Qatari students have the necessary experience required by the private sector', Table 7.8 indicates that 44.3% of the participants were in agreement, yet 23.2% of the participants disagreed with the statement. Due to the high percentage of participants who chose to remain neutral on this subject, the mean value remained at 3.29.

For the following statement, that 'If Qatari students have appropriate business experience, the private sector will be willing to employ them', 52.9% of the participants expressed the belief that the qualifications of Qatari students have made them attractive to, and employable by, the private sector. 13.4% of the participants did, however, reject the idea. The 33.8% neutral value renders it difficult to draw any conclusive result on this data, although the weighting for those participants in support of the statement seems to hold the majority.

It is also apparent in Table 7.8 that a high percentage of participants (61.3%) registered their agreement for the notion that Qataris with a suitable education can have high performance levels in the workplace. Indeed, this is further indicated by the mean value of 3.5915.

For the statement which suggests that 'Qatari students are willing to accept any job that becomes an available option to them', 31.6% of the participants were in agreement and 40.8% correspondingly disagreed with the notion. It thus seems that Qatari students are not ready to accept just any job that is available, as they have high expectations and multiple choices. The mean remains at 2.8 does not, however, indicate a definitive position on this issue.

One of the reasons influencing job-related choices was considered to be social prestige. Participants were therefore asked to express their opinions on the following statement: 'Qatari students are concerned with their social prestige when choosing a job'. As is illustrated by Table 7.8, the decisions made by Qatari students in the job market are related to ideas of class and prestige; 55% of the participants agreed with this position, but 11.3% rejected the statement. Although the neutral position is high (33.8%), the correlation between job choices and social prestige can still be made.

7.8 ASSESING THE READINESS OF QATAR'S POPULATION FOR A KBE

This section explores the participants' views on whether the people of Qatar have the necessary skills to fulfil the needs of the private sector, on the contribution that these people can make to that sector in terms of performance level, and on the difference between Qatari and non-Qatari members of the work force in terms of productivity and performance levels. The results are depicted in table 7.9a.

Indeed, as is evidenced by Table 7.9a, 40.8% of the participants agreed that 'Qatari people have the skills required to meet the needs of the private sector'. The mean value was 3.1972 and 21.1% of the participants also rejected this notion.

In addition, 50% of the participants agreed that 'The productivity of Qatar's citizens is suitable for the private sector', yet 12.7% rejected this suggestion, thereby giving rise to a mean value of 3.4085. Given that 37.3% of the participants opted to remain neutral on this subject, it is difficult to reach any distinct conclusion, but the general tendency is towards the positive end of the spectrum.

Furthermore, in total 61.3% of the participants agreed that 'Qataris with suitable experience can have high performance levels in the private sector'. The mean value was 3.5915 and 9.1% of the participants rejected this statement.

Correspondingly, a total of 61.2% of the participants agreed that 'Qatari people with adequate *skills* perform well in the workplace', whereas 9.8% of the participants rejected this statement. The statistic representing those participants who chose the neutral stance is again high at 28.9%, yet there is still a perceptible inclination towards a positive response to this statement.

With regard to the statement that 'Qatar's citizens are more productive than non-Qatari nationals', the findings in Table 7.9a show that as a result of the controversial nature of this topic, 47.9% of the participants remained neutral. Indeed, a mere 26.7% of the participants agreed with this statement and 25.4% of the participants similarly disagreed with the proposal. The mean value of 2.9 is then around the neutral level.

Table 7.9a: Perceptions on Qataris and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatari individuals have the *skills* required to satisfy the needs of the private sector:					
Strongly disagree	8	5.6	3.1972	6	.96197
Disagree	22	15.5			
Neutral	54	38.0			
Agree	50	35.2			
Strongly agree	8	5.6			
The *productivity* of the Qatari individuals is adequate for the private sector:					
Strongly disagree	2	1.4	3.4085	4	.80912
Disagree	16	11.3			
Neutral	53	37.3			
Agree	64	45.1			
Strongly agree	7	4.9			
Qatari individuals with adequate *experience* can have high performance in the workplace:					
Strongly disagree	4	2.8	3.5915	1	.86011
Disagree	9	6.3			
Neutral	42	29.6			
Agree	73	51.4			
Strongly agree	14	9.9			
Qatari individuals with adequate *skills* perform well in the workplace:					
Strongly disagree			3.5493	2	.80405
Disagree	3	2.1			
Neutral	11	7.7			
Agree	41	28.9			
Strongly agree	79	55.6			
	8	5.6			
Qatari individuals are more productive than non-Qatari individuals:					
Strongly disagree	20	14.1	2.9296	8	1.05621
Disagree	16	11.3			
Neutral	68	47.9			
Agree	30	21.1			
Strongly agree	8	5.6			

As can be seen from Table 7.9b, 'Qataris prefer to work in the private sector because of its ability to offer stable employment', with 39.7% in agreement and as only 29.7% of the participants rejected this notion. The mean value was 3.0638. According to the results, one-third of the sample from the survey is located under the neutral label for this particular subject.

Table 7.9b: Perceptions on Qataris and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatari individuals prefer private sector for offering stable and secure work:					
Strongly disagree	15	10.6	3.0638	7	1.10978
Disagree	27	19.1			
Neutral	43	30.5			
Agree	46	32.6			
Strongly agree	10	7.1			
Qatari individuals prefer to work in the public sector as they do not want to work hard:					
Strongly disagree	11	8.0	3.2628	5	1.10660
Disagree	19	13.9			
Neutral	48	35.0			
Agree	41	29.9			
Strongly agree	18	13.1			
Qatari individuals are ready to work in any location:				9	
Strongly disagree	21	14.8			
Disagree	39	27.5	2.8239		1.23368
Neutral	46	32.4			
Agree	16	11.3			
Strongly agree	20	14.1			
Qatari individuals are not keen to change their jobs:			3.5000	3	2.68368
Strongly disagree	5	3.5			
Disagree	26	18.3			
Neutral	47	33.1			
Agree	49	34.5			
Strongly agree	14	9.9			

When examining the sectoral choices of either the public sector or the private sector for Qatar's citizens, 43% of the participants preferred to work in the former area. It can be further seen that 21.9% of the participants agreed that Qatari workers prefer employment in the public sector so as to avoid having to work hard. The mean value was 3.2628. This also reiterates the rentier nature of Qatar and its economy. The security, hidden employment, inefficiency, and the lack of effectiveness somehow attract Qatari workers to the public sector, which remains the dominant sector within Qatar's economy.

Regarding the statement that 'Qatar's citizens are ready to work in any location', 42.3% of the participants voiced their disagreement, as can be seen in Table 7.9b. 44.4% of the participants did, however, agree that 'Qataris are not willing to change their jobs'. The mean value was 3.5, whereas 21.8% of the participants seem to support the statement.

7.9 PERCEPTIONS ON QATARISATION

This section aims to examine the participants' perceptions of the process of Qatarisation, with statements relating to government legislation, the workforce, and the impact of such a process on the Qatari economy, in both the short-term and the long-term. Given that Qatarisation aims to replace foreign nationals with workers of Qatari nationality, the Qatari nationals are therefore expected to develop their skills and knowledge in order for Qatarisation to be successful. The results are presented in Tables 7.10a and 7.10b.

Table 7.10a: Perceptions on Qatarisation

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Government legislation exists to establish an efficient Qatarisation strategy:					
Strongly disagree	10	7.0	3.2746	3	1.07284
Disagree	21	14.8			
Neutral	47	33.1			
Agree	48	33.8			
Strongly agree	16	11.3			
This legislation is sufficient to achieve Qatarisation:					
Strongly disagree	2	1.4	3.1972	8	.93201
Disagree	33	23.2			
Neutral	53	37.3			
Agree	43	30.3			
Strongly agree	11	7.7			
The private sector is aware of its social responsibility in encouraging Qatarisation:					
Strongly disagree	9	6.3	3.2465	4	.99777
Disagree	18	12.7			
Neutral	56	39.4			
Agree	47	33.1			
Strongly agree	12	8.5			
The private sector has few rules of social responsibility regarding Qatarisation:					
Strongly disagree	3	2.1	3.2183	6	.82614
Disagree	22	15.5			
Neutral	63	44.4			
Agree	49	34.5			
Strongly agree	5	3.5			
Qatari workforce does not have the adequate *skills* to replace the expatriates:					
Strongly disagree	10	7.0	3.2113	7	1.10339
Disagree	27	19.0			
Neutral	45	31.7			
Agree	43	30.3			
Strongly agree	17	12.0			

The initial proposition within this section aimed to explore the participants' knowledge and awareness of the existing government legislation to initiate the Qatarisation process. The results in Table 7.10a show that 44.5% of the participants agreed with this issue, yet 21.8% of them also disagreed with this statement. The mean value was 3.2746. A large number of the participants did, however, remain neutral.

With regard to the assertion that the existing legislation for Qatarisation is sufficient, 38% of the participants agreed with this suggestion, but 24.6% of the participants objected to it. The attainment of any definitive conclusion on this subject was thwarted by a total of 37.3% of the participants opting for the neutral position, which was equal to the agreement position.

In relation to the role, and the responsibility, of the private sector in the Qatarisation project, 41.6% of the participants expressed their agreement with the statement and 19% of the sample simultaneously rejected it. The figure for those participants who remained neutral on this topic (40%) is, however, almost equal to that which represents agreement.

The following statement received similar responses: 'The private sector has few rules of social responsibility regarding Qatarisation'. 38% of the participants registered their agreement with the statement; 17.6% disagreed with this topic. The 45% of the participants who remained neutral is, however, a matter for concern, and the mean value of 3.2 is thus indicative of this situation.

To develop further critical perspectives on Qatarisation, the participants were also asked to express their opinion on the following statement: 'The Qatari workforce does not have the appropriate skills to replace the foreign nationals'. As the results in Table 7.10a thus illustrate, 42.3% of the participants agreed with this statement, whereas a total of 26% of the sample favoured disagreement here. Again, a large percentage of the participants chose the neutral option, but there is a correspondingly greater value associated with agreement, at least relatively speaking. Indeed, this brings the whole Qatarisation project into question, yet it simultaneously justifies Qatar's intentions to develop its knowledge base.

Table 7.10b: Perceptions on Qatarisation

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Qatari workforce does not have the adequate *experience* to replace the expatriates:				5	
Strongly disagree	7	4.9	3.2183		.98295
Disagree	26	18.3			
Neutral	47	33.1			
Agree	53	37.3			
Strongly agree	9	6.3			
Qatarisation will be harmful for the Qatari economy:					
Strongly disagree	16	11.3			
Disagree	29	20.6	2.9929	9	1.14951
Neutral	52	36.9			
Agree	28	19.9			
Strongly agree	16	11.3			
Qatarisation will provide motivation for the Qatari individuals to develop themselves:					
Strongly disagree	7	4.9	3.3662	2	1.05507
Disagree	25	17.6			
Neutral	35	24.6			
Agree	59	41.5			
Strongly agree	16	11.3			
Qatarisation will help Qatar to develop the necessary skills and knowledge for the economy:					
Strongly disagree	7	5.0	3.4173	1	1.09610
Disagree	22	15.8			
Neutral	39	28.1			
Agree	48	34.5			
Strongly agree	23	16.5			

As depicted by Table 7.10b (and supporting the results from the previous statement), 43.6% of the participants agreed with the notion that 'The Qatari workforce does not have the appropriate experience to replace the foreign nationals'. A total of 23.2% of the sample disagreed with this assertion.

The notion that 'Qatarisation will be harmful for the Qatari economy' can be considered more controversial and political than previous statements, and indicative of this status is the high neutral stance of the participants at approximately 37%. Although 31.2% of the participants agreed with this statement, 31.9% also expressed their objections. It is therefore difficult to draw any definitive conclusion from these two rankings due to their relative similarity.

With regard to the positive impact of Qatarisation (and as can be seen from Table 7.10b), a total of 52.8% of the participants agreed with the suggestion that 'Qatarisation will provide motivation for Qataris to develop themselves'. In addition, 22.5% of the participants rejected this position. This result implies that there is a positive expectation for Qatarisation in terms of its ability to motivate the population, enabling them to develop sufficiently in order to be in a position to replace the existing foreign workforce.

Echoing the result established for the previous statement, 50.1% of the participants expressed their support for the belief that 'Qatarisation will help Qatar develop the necessary skills and knowledge for the economy'. Conversely, 20.8% of the participants rejected this position; the mean value was 3.4173, which thus demonstrates an inclination towards agreement over disagreement for this statement.

The findings in this section provide a valuable response to the concept of Qatarisation as a public policy. The controversial and political nature of this issue, however, resulted in a situation where a significant number of the participants opted to remain neutral when addressing these points. Indeed, if a proposal is detached from any political undertones then the percentage of neutral answers correspondingly decreases. It thus seems that participants of the survey wish to avoid any sentiments that could stray within the boundaries of political opinion.

7.10 PERSONAL KNOWLEDGE DEVELOPMENT AND KBE

This section looks at personnel knowledge and its relationship to the KBE, with questions revolving around the reading of books, the types of those books, and the type of work (either private sector or public sector), which is preferable to a citizen of Qatar. These questions aim to establish what the readiness of the individual participants is for a KBE at a foundation level. The results are depicted in Table 7.11.

In response to the query as to whether they read books other than textbooks, 71.8% of the participants stated yes (as is seen in Table 7.11); the remaining 28.2% opted for the negative answer. The position of the affirmative answer should be considered as encouraging, since the Middle East, and the GCC region in particular, is known for having a low level of reading activity.

Those participants who responded with an affirmative answer to the preceding question were then asked to state the subject areas that they were interested in when it came to reading. As the results in Table 7.11 show, 42% of the participants opted for History, 35% for Science and Technology, 25.9% cited Politics, 21% Economics, 20.3% fiction, and 16.1% were drawn to current affairs.

Table 7.11: Perceptions on Individual Knowledge and Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Do you read any other book other hand your school textbooks?			1.7183	2	.45142
Yes	102	71.8			
No	40	28.2			
If yes to above question, please state what type of books do you read?					
Scientific/Technology	50	35.0			
Economy	30	21.0			
Current Affairs	23	16.1			
History	60	42.0			
Politics	37	25.9			
Fiction	29	20.3			
If yes to the above question, would you please provide the number of books you have read in the following categories in the last one year?					
Scientific/Technology	48	20.4			
Economy	29	12.3			
Current Affairs	27	11.4			
History	63	26.8			
Politics	39	16.5			
Fiction	29	12.3			
Which of the following current affairs magazines do you read?					
Economist	13	9.5			
The Times	24	17.5	3.7956		1.46598
Newsweek	13	9.5			
Local current affair	15	10.9		1	
None	137	52.6			

As is illustrated by Table 7.11, the most popular genre of reading material is History, followed by (in order of frequency) books related to Science and Technology, Politics, fiction, Economics, and current affairs. It should be also noted that due to having a filtering question in the previous question and also due to having individual respondents opting for more than one type of subject areas, percentage distribution of subject areas relates not to the number of participants but to the number of subject areas opted by the participants.

When defining how globally connected the participants are in terms of their reading habits, they were asked to identify which international magazines they read. 52.6% stated that they do not read any of the magazines on current affairs, 17.5% opted for The Times, 10.9% suggested magazines on local current affairs, and 9.5% of the participants declared that they read The Economist and Newsweek. Given that each participant could select more than one option in this section, it is then somewhat of a concern that 53% of the sample do not reading any international or local magazines, so as to be informed of developments, in both the world and their immediate region.

Although mixed results are established in this section, it is not easy to qualify the encouraging results. Additional questions could be introduced in order to cross-reference the results.

7.11 PERCEPTIONS ON SECTORAL CHOICE FOR JOBS AT AN INDIVIDUAL LEVEL

An earlier section of this chapter located the perceptions of the participants on a general level in relation to the Qataris' choice of sector to find a job in terms of private and public sector. This section, however, aims to locate the participants' job selection criteria in relation to sectoral distribution. In other words, Table 7.12 investigates the preferences of the participants in terms of their choice of work and whether the issue of a private sector or a public sector job is a fundamental factor in job determination. A similar issue is discussed above in the case of Qataris' choice as perceived by the participants, while the discussion in this section relates to participants' individual choices.

As the results in Table 7.12 indicate, 58.5% of the participants preferred to work in the public sector, the rest (41.5%) of them, expressed their preference for the private sector.

Table 7.12: Perceptions on Sectorial Choice for Jobs

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Which sector do you prefer more in seeking for a job?			1.4444		.59433
Public Sector	79	58.5			
Private Sector	54	41.5			
It provides a stable working environment:			3.5214	2	.12824
Strongly disagree	9	6.4			
Disagree	17	12.1			
Neutral	33	23.6			
Agree	54	38.6			
Strongly agree	27	19.3			
It provides stable income (salary):			3.5390	1	1.02482
Strongly disagree	6	4.3			
Disagree	16	11.3			
Neutral	37	26.2			
Agree	60	42.6			
Strongly agree	22	15.6			
It does not require hard work and creativity:			2.5106	5	1.01148
Strongly disagree	22	15.6			
Disagree	53	37.6			
Neutral	42	29.8			
Agree	20	14.2			
Strongly agree	4	2.8			
It does not require to be competitive:			2.5461	3	1.15558
Strongly disagree	28	19.9			
Disagree	50	35.5			
Neutral	27	19.1			
Agree	30	21.3			
Strongly agree	6	4.3			
It does not require innovation:			2.5248	4	1.19870
Strongly disagree	33	23.4			
Disagree	43	30.5			
Neutral	31	22.0			
Agree	26	18.4			
Strongly agree	8	5.7			
Which particular industry would you like to work in the future?			2.9500	2	2.08567
Banking/Finance	30	21.4			
Engineering/Sciences	52	37.1			
Education/Academia	19	13.6			
Research and Development	19	13.6			
Hospitality/Tourism	5	3.6			
Construction	1	.7			
Food Industry	1	.7			
Other Service industries	9	6.4			
Civil Servant	4	2.9			

The participants were asked to reflect on the reasons for their sectoral choice and they were asked to demonstrate their preferences towards the statement that 'because it

provides a stable working environment'. As the results in Table 7.12 show, 57.9% of the participants agreed that a stable working environment was a decisive factor in their choice, whereas 18.5% of them rejected this notion. For the role of salary in the choice of which sector to work within, 58.2% of the participants were in agreement on its validity, yet 15.6% of the participants rejected its importance. Similarly, 53.2% of the participants rejected the idea that their sectoral choice was determined by those areas that do not require hard work and creativity; a total of 17% of the participants did, however, agree with this reason. Furthermore, the participants were questioned on whether the nature of the sector, as being competitive, was a motivational factor: 55.4% of them disagreed, but 25.6% of the participants agreed with this theory. They were, moreover, asked to state their opinion on the proposed reason for the choice of sector as one that does not require innovation. 53.9% of the participants rejected this proposal, but 24.1% of them were in agreement.

Further, as the mean ranking in Table 7.12 indicates, a stable income and working environment were the sectoral choices that attained the highest values as the most important factors to consider when choosing a particular sector within which to work. In addition, the mean scores reveal that the participants demonstrated their assertiveness through the relegation of the category that described a sector which did not require hard work and creativity to the end of the rankings.

In terms of the most desirable industry (and as the results in Table 7.12 demonstrate), 37.1% of the participants would prefer to work in Engineering or the Sciences, followed by Banking and Finance with a value of 21.4%; a further 13.6% of the participants voiced their preferences for Education and Academia and Research and Development. According to the results, only 2.9% of the sample considered working in the Civil Service, and the demand for the other identified service industries proved to be very low.

An important element of the findings depicted in Table 7.12 is that quite substantial numbers of participants opted for the neutral position in most of their responses. For the statement that 'The sector does not require hard work and creativity', the neutral position rose to approximately 30% of the sample; the lowest value for the neutral response is observed for the statement that 'The sector does not have to be competitive'. This precedent for the neutral option does not help the search for

conclusive results, since it seems that the participants do not feel comfortable expressing their genuine thoughts on these topics. As this neutral response was predominantly associated with the unwanted questions, little confidence can be gained from these results for the future workforce of Qatar.

7.12 AWARENESS OF THE GOVERNMENTAL POLICIES RELATED TO A KBE

This section aims to measure the awareness of the participants in relation to the government's policies towards a KBE. In other words, the results in Table 7.13 highlight the participants' knowledge of governmental policies, institutions, and departments that have been created for the purpose of transforming Qatar into a KBE.

As the results in Table 7.13 show, 54.6% of the participants were aware of the government's policies to create a KBE, but 45.4% of the participants had not heard about these policies. Such a lack of awareness should be considered as disturbing in the light of the government's aggressive policies.

Those participants who voiced their awareness of the government's policies towards the idea of a KBE were asked to identify the source of their knowledge. 23.8% of them stated television, but only 11.2% identified the Internet as the source of their information, and 10.5% of the participants cited their personal interest as the factor behind their awareness of these matters.

The participants were also asked to name a number of institutions created in an attempt to transform Qatar into a KBE; 41.5% of the participants identified the Qatar Foundation, 29.3% opted for Qatar University, and 9.8% of the sample stated Education City. What institutions remain received little recognition. The result for this particular section is rather encouraging, as it suggests that the participants are aware of some of the local institutions created for the transformation of Qatar into KBE.

All of the participants were, moreover, invited to define the Qatar Foundation. Consequently (and as is illustrated by Table 8.13), 34.5% of the participants rightly identified it as a research foundation. Although in comparison, 30.2% of the participants defined it as a college and 35.3% of them identified it as a social

institution and a charity. Despite the latter definition, the former labels, totalling approximately 65% of the sample, are correct.

Table 7.13: Perception in Government's Policies on Knowledge Economy

Variable Group	Frequency (Valid)	% (Valid)	Mean	Mean Ranking	Standard Deviation
Have you ever heard anything about government's policies for developing knowledge economy?			1.4539		.49965
Yes	77	54.6			
No	64	45.4			
If yes, how did you learn?					
TV	34	23.8			
Newspapers	13	9.1	2.1538		1.18516
Internet	16	11.2			
Personal interest	15	10.5			
Can you name any institution created in Qatar for knowledge economy?					
Qatar University	12	29.3			
Qatar Foundation	17	41.5			
Carnige Mellon University	1	2.4	3.1707		1.62638
Education City	4	9.8			
Al-Watan Newspaper	1	2.4			
UREP	2	4.9			
Technological Park	1	2.4			
None	3	7.3			
Qatar Foundation is a…					
Social institution	40	28.8			
Is a charitable institution	9	6.5	2.7050		1.21854
Is a college	42	30.2			
Is a research foundation	48	34.5			
Since I do not have the skills, government policies for KBE will not affect my life positively:				3	
Strongly disagree	16	11.4	2.5071		.88551
Disagree	56	40.0			
Neutral	51	36.4			
Agree	15	10.4			
Strongly agree	2	1.4			
Government's policies for KBE will create job opportunities for me:					
Strongly disagree	11	7.9			
Disagree	34	24.3	2.9714	1	1.05900
Neutral	56	40.0			
Agree	26	18.6			
Strongly agree	13	9.3			
As a results of government's politics for KBE, there will not be any change:					
Strongly disagree	18	12.8		2	
Disagree	44	31.2	2.6525		.9990
Neutral	53	37.6			
Agree	21	14.9			
Strongly agree	5	3.5			

As the results in Table 7.13 show, 51.4% of the participants expressed disagreement with the statement that proposes 'Since I do not have the necessary skills, the governmental policies for a KBE will not affect my life positively'. This thus indicates that these participants expect those policies to have an impact on their life. Despite this suggestion, only 11.8% of the participants actually agreed with the notion, thereby emphasising that they do not have many expectations; such a lack of expectations can be attributed to a corresponding lack of the necessary skills with which to benefit from these particular policies. It is also important to note that 36.4% of the sample offered a neutral answer, which can be interpreted as agreement with the statement, but due to its political implications these participants must (and choose to) avoid giving a direct answer.

Further exploring the expected personal impact of governmental policies for a KBE, the participants were asked to express their opinion on the statement that 'The government's policies for a KBE will create job opportunities for me'. Indeed, as is evidenced by Table 7.13, only 27.9% of the participants were in agreement with this statement, whereas 40% of them remained neutral and 32.2% completely rejected this proposition. Due to the political implications of the statement, the rating for the neutral position is again found to be rather high.

To provide an overall evaluation of the Qatari government's policies for a KBE, the participants were asked to express their opinions on the statement, which suggests that 'As a result of the government's policies for a KBE, there will not be any change'. As is illustrated by Table 7.13, a total of 44% of the participants rejected this statement, envisioning that things will change due to the government's policies for transforming Qatar into a KBE. 18.4% of the participants, however, expressed their[…], implying that they do not consider such policies will have much of an impact. Crucially, 37.4% of the participants remained neutral: a statistic which can again be explained by the politically sensitive nature of the statements and a corresponding desire by some participants not to be considered as critical of government policy.

7.13 CONCLUSION

The preliminary findings presented in this chapter provide an overview of the results obtained from the questionnaire survey, which was conducted with university students in Qatar; these findings will be further explored in the next chapter.

This study ultimately revealed the majority of the participants (93.7%) to be young, of 18-21 years of age, and studying undergraduate degrees. In addition, the results also indicate that the majority of the participants (93%) were of single marital status; 43.4% of these participants identified themselves as of Arab-Qatari ethnicity and 56.6% of the participants were described as Arabs from other Arab countries and non-Arab countries. A large proportion of the participants from the survey (58.2%) correspondingly consider themselves to be of the middle social class, whereas only 26.2% were from the upper middle class.

Given the backgrounds and level of educational engagement displayed by the participants, they were all appropriately qualified to participate in the study, answering questions relating to the Qatari economy and related policies. The suitability of the participants was essential to the success of the study, in that it was able to acquire important data on pertinent questions concerning the Qatari economy and its future.

The analysis in this chapter provides an image of the social reality that is the transforming of Qatar into a KBE through the perceptions of the university students, who should be envisaged as the country's future. Examining these students' intellectual development and the formation of their knowledge and skills reveals, however, that they, and the demographic which they represent, are not yet ready for a KBE, despite the clear indications from the macroeconomic analysis in the previous chapter that Qatar is preparing for such a transformation. There is consequently inconsistency and asymmetry between the macro expectations, the micro expectations, and the findings of the survey. The data that has been discussed here will be of greater importance when analysing these findings in subsequent chapters, with the objective of further 'meaning making'

Chapter 8

DETERMINING FACTORS BEHIND THE PERCEPTIONS OF UNIVERSITY STUDENTS ON THE ASPECTS OF A KBE IN QATAR: INFERENTIAL STATISTICAL ANALYSIS

8.1. INTRODUCTION

As the previous chapter presented the initial findings based on the descriptive statistics attained from the questionnaire survey that was conducted for this study, this chapter thus aims to expand that original investigation, developing inferential statistical analysis through a focus on the statistical significance of control variables in the answers provided by participants to the survey. These control variables are based on the demographic questions raised in the initial section of the questionnaire and they include the following categories: 'age', 'gender', 'nationality', 'ethnicity', 'faculty', 'degree', and 'class'.

Given the inhibitions necessitated by the breadth of the findings, this chapter only presents results at 5% and 10% significance level, or, in other words, non-significant results at these critical levels are excluded. Although a 5% level of significance is considered the norm for similar studies, the statistical confidence level is here expanded to 10%, so that the results, which are on the edge of the 5% confidence level, can be accepted. These particular results are identified with an asterisk in the following tables: (*) identifies statistical significance at 5% level and (**) stands for statistical significance at 10% level.

The inferential statistical results in this chapter are mainly based on testing the differences between participants in relation to each control variable for the given

answers to the statements and questions through the use of non-parametric tests, including the Independent Samples Kruskal-Wallis Test (KW Test) and the Mann-Whitney U Test (MWU Test). For example, testing a particular statement in relation to the significance of age groups illustrates whether the age differences of the participants have an impact on the answers given by participants. Presence of significant result indicates that there are differences between the participants in relation to that particular control variable for the answers given to a particular statement or question. If the given answers by the participants in relation to a particular control variable were very close and similar, then the differences would be statistically insignificant through KW Test and MWU Test.

It should be noted that the number of subgroups determines the nature of the test: if the control variable has only has two variables then the MWU Test is employed, such as in the case of gender. If, however, there are more than two subgroup control variables, such as age, then the KW Test is used. The KW Test is, thus, selected for this scenario because it allows the testing of multiple group categories for a single control variable; in this case, the faculty is the control variable and the relevant disciplines are the group categories. This correct choice permits the accurate calculation of the *p*-value, thereby enabling an understanding and appreciation of the responses that were given to the statement in question.

Due to having a very large data set and analysis results, each table only presents the statistically significant results and the statistically significant control variables at 5% and 10% level of significance. This by definition implies that the control variables which are not mentioned in each variable or table are not significant indicating similarity in the responses.

8.2. DETERMINING FACTORS OF THE PERCEPTIONS ON QATAR'S ECONOMY AND THE NEED FOR CHANGE

This section focuses on testing the perceptions of the participants with regard to the statements on the economy of Qatar and its need for change. In this, as mentioned KW and MWU tests are used to develop some meanings.

As can be seen in Table 8.1, the variables for faculty, degree, nationality, and class are found to be significant in the case of the answers given in response to the statement that 'Qatar's economic performance has been excellent'.

Faculty, as a control variable is significant at 10% significance value, since its estimated *p*-value is 0.071, which implies that there are differences in the opinions directed at this statement by participants coming from different faculty backgrounds. This situation is further apparent from the relatively high mean rank for the majority of the group categories in the faculty control variable. For example, those participants studying Pharmacy achieved the highest mean rank of 118.50, followed by those studying Law with a mean rank of 83.10; these disciplines were subsequently followed by Business and Economics holding a mean rank of 78.95. The lowest mean rank recorded was for those studying *Shari'ah*, with a figure of 43.17. Such a low mean rank in this group is indicative of incorrect teaching methods that have not nurtured and developed critical thinking.

Table 8.1: Significance of Control Variables on the Statement: '*Qatar's Economic Performance has been Excellent'*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar's economic performance has been excellent	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	58.79 78.95 76.40 83.10 118.50 43.17 69.33	KW Test	.071**
	Degree	Undergraduate Master Doctorate	73.09 70.70 19.63	KW Test	.021*
	Nationality	Qatari Other	78.41 67.09	MWU Test	.079**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	94.17 76.64 65.82 81.90 47.70	KW Test	.054**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Degree, as a control variable, is statistically significant at 5% significance value, since its estimated *p*-value is 0.021, implying that those people with differing degrees do not share the same opinion in relation to the statement evaluated by Table 8.1.

Indeed, this is evidenced by the descending ranking of mean values from Undergraduates to Masters Students and finally to those doing doctorates, with values of 73.09, 70.70, and 19.63.

The control variable of nationality, divided into subgroups for Qatari and other nationalities, was also tested for the aforementioned statement; the KW Test result in Table 8.1 depicts a statistically significant difference at 10% critical level among the nationality categories in the position taken towards this statement, as the estimated *p*-value of 0.079 is lower than 10% confidence level. The mean ranking gives weight to this suggestion, since Qatari nationals secured a high mean rank of 78.41, compared to that of the non-Qatari nationals with 67.09. Pride in Qatar's economic progress could explain this high mean rank for Qatari nationals, yet it must be stated that the figure for non-Qatari nationals was not radically different.

With regard to the control variable of class, a wide range of opinions is expressed for the statement from Table 8.1 by various class categories; this is illustrated by the estimated *p*-value here, which is 0.054, less than 10% significance value. The mean ranking supports this suggestion, for those benefiting from Qatar's economic progress, such as the upper class and upper middle class, achieved the highest mean ranks, with values of 94.17 and 76.64. These values were echoed by the figure of 81.90 for those that perceive increasing economic benefits and possibilities, namely the lower middle class. Participants from the lowest economic level of the social strata conversely achieved a low mean rank of 47.70, highlighting their inability to share in the benefits of Qatar's economic progress and the lack of economic opportunities for these people to progress socially.

Table 8.2 analyses the significance of control variables on the statement that 'Qatar's economy is oil-based rentier economy'. The first control variable to be examined was that of faculty, which had a statistical significant percentage of 10% significance value, with the estimated *p*-value 0.092 below the significance value mark, again indicating differences between participants for the current statement. This control variable was divided into a number of subgroups that included a range of different academic disciplines. Among the variables, 'Law' achieved the highest mean rank at

92.60, followed by Engineering with a mean rank of 76.51, and the lowest mean rank was awarded to *Shari'ah* with 13.50. The *p*-value here is 0.092.

Table 8.2: Significance of Control Variables on the Statement: '*Qatari Economy is an Oil-based Rentier Economy'*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy is an oil-based *rentier* economy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.67 71.65 76.51 92.60 72.00 13.50 57.00	KW Test	.092**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.3 examines the significance of control variables on the notion that 'The economy of Qatar is still productive through other means beyond the export of oil and gas'. In this table, two control variables were selected and subsequently divided into various subgroups. The nationality control variable was statistically significant at a significance level of 5%, with its estimated *p*-value at 0.048, thus denoting key differences between the responses directed at this control variable. Indeed, this *p*-value may be attributable to a number of factors, such as a lack of understanding about Qatar's other economic functions aside from the export of oil and gas. It therefore highlights the need for the state to market its alternative economic functions and activities. The nationality control variable was divided into classes for Qatari and all those outside that initial bracket; the ethnicity control variable was, however, divided into Arab-Qatari, Arab-non-Qatari, and a further category for those belonging to neither preceding faction. In the control variable for nationality, the Qatari subgroup achieved the highest mean rank with the figure of 77.64; in comparison, the category designated for Other secured a mean rank of 64.75.

Table 8.3: Significance of Control Variables on the Statements: *Qatari economy is a productive economy beyond oil and gas export*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy is a productive economy beyond oil and gas export	Nationality	Qatari Other	77.94 64.75	MWU Test	.048
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	78.82 63.94 65.67	KW Test	.092**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The ethnicity control variable is statistically significant, possessing a 10% significance value and an accompanying *p*-value of 0.092, (which is below this critical mark), thereby again suggesting a diverse range of survey answers.. The Arab-Qatari grouping achieved a mean rank of 78.82; the other two subgroups were also relatively similar, since the Arab-non-Qatari division scored a mean rank of 63.94 and the group category for 'Other' placed at 65.67.

Table 8.4 presents the findings related to the significance of control variables on the statement that 'The economy of Qatar is financialised and monetised'. This is assessed through examining two main control variables with sub-categories. The 'faculty' control variable is significant at 5% with *p*-value of 0.016, reflects the broad spectrum of opinions centred on this variable. Moreover, in this control variable, 'Pharmacy' secured the highest mean rank with a value of 130.00 and it was followed by the value for 'Law' at 103.90. The lowest mean rank in this example was achieved by the 'Other' subgroup with 34.83, yet *Shari'ah* offered some improvement on previous poor results.

Table 8.4: Significance of Control Variables on the Statements: *Qatari economy is a financialised and monetarised economy (wealth is invested in financial and money markets domestically and foreign*)

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy is a financialised and monetarised economy (wealth is invested in financial and money markets domestically and foreign)	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	65.71 72.70 74.91 103.90 130.00 51.83 34.83	KW Test	.016*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	92.33 79.26 65.17 55.10 55.10	KW Test	.059**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The 'class' variable, however, is significant at 10% with *p*-value of 0.059, which indicates a further diversity among the opinions of the participants towards this control variable. The subgroup related to the upper class secured the highest mean rank with a value of 92.33 and the upper middle class achieved a mean rank of 79.26.

These values consequently suggest that the subcategories have a 'familiarity' with, and 'knowledge' of, the nature of Qatar's economy.

Table 8.5 illustrates the significance of the specified control variables on the suggestion that 'Qatar should continue to invest through FDI in other countries, so as to provide a sustainable economy'. In this table, class composes the sole control variable and it was divided into several appropriate subgroups. This control variable is, moreover, statistically significant at a significance level of 5%. In terms of class as a control variable, the highest mean rank achieved was 96.10 by the lower middle class subgroup; this rank was followed by that of the upper middle class subgroup with a value of 84.14. In addition, the working class achieved a mean rank of 48.00.

Table 8.5: Significance of Control Variables on the Statements: *Qatar should continue to invest through foreign direct investment in other countries to provide sustainable economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar should continue invest through foreign direct investment in other countries to provide sustainable economy	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	73.54 84.14 64.57 96.10 48.00	KW Test	.035*

Note: (*) Statistically significant at 5% level

These results highlight the various knowledge bases available to the various subgroups in this control variable, with those from the middle and upper class categories having more information and knowledge about Qatar's economic needs than the working class category. This situation could be due to a number of reasons, such as greater access to relevant information and a higher involvement in the economy of Qatar for them to make such a deduction than the working class that is, potentially, more limited in their ability to access to information. The estimated *p*-value is 0.035 within the critical mark indicating the significance of the differences separating the responses to this statement.

Table 8.6 delves into the significance of control variables on the statement that 'Qatar's economy should invest in technologically innovative projects'. In this table, three control variables are examined: age, faculty, and class. Each control variable is

subsequently divided into suitable subgroup categories, which take into consideration the most significant determining factors in each control variable.

Table 8.6: Significance of Control Variables on the Statements: *Qatari economy should invest in technologically innovative projects*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy should invest in technologically innovative projects	Age	18-21 22-25 26-30	60.34 85.51 66.33	KW Test	.001*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	53.39 84.89 71.47 79.10 108.50 23.00 52.20	KW Test	.004*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	50.50 70.69 69.48 107.50 27.50	KW Test	.014*

Note: (*) Statistically significant at 5% level

The age control variable is statistically significant with *p*-value of 0.001. The age control variable subgroup, which demonstrated the highest mean rank, was that for 22-25 year-olds with a value of 85.51; this ranking was followed by the value of 66.33 for the subgroup of 26-30 year-olds. The 'faculty' control variable is significant at 5% with *p*-value of 0.004, thus reflecting the disparities among the answers gathered to the questionnaire survey. Pharmacy scored the highest mean rank at 108.50 and it was followed by Law with a value of 79.10. The lowest mean rank was awarded to *Shari'ah* with a value of 23.300.

The class control variable is significant at 5% critical level, where the lower middle class category scored the highest mean rank with a value of 107.50, followed by the upper middle class group with a mean rank of 70.69. The lowest mean rank was for the working class category and its accompanying value of 27.50. Such a high mean rank scored by the lower middle class group is indicative of this class's desire for an economy that would allow them to benefit from more economic possibilities and it is also emblematic of its ability to envisage the possible scenarios that would arise from

new, technologically innovative projects. The *p*-value is 0.014, thereby stressing the contestable nature of the statement in question.

Table 8.7 explores the significance of control variables with regard to the statement that 'The economy of Qatar is not innovative'. There are four control variables found to be significant: gender, age, faculty, and degree. The gender control variable has a significance level of 5% to be statistically significant. The subgroup for those of male gender scored the highest mean rank at 76.94; the equivalent subgroup for those of female gender scored 63.36. The *p*-value is 0.050.

Table 8.7: Significance of Control Variables on the Statements: *'The Qatari economy is not an innovative economy'*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The Qatari economy is not an innovative economy	Gender	Male Female	76.94 63.36	MWU Test	0.050*
	Age	18-21 22-25 26-30	70.57 68.21 101.85	KW Test	0.046*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	73.13 78.81 74.44 34.00 6.00 34.00 78.25	KW Test	.029*
	Degree	Undergraduate Master Doctorate	69.52 121.30 75.25	KW Test	.016*

Note: (*) Statistically significant at 5% level

The age control variable had a critical mark of 5% and a *p*-value of 0.046, thus stressing the variety of opinions from among this selection of responses. The highest mean rank was secured by the 26-30 year-old age group, with a rank of 101.85, and it was followed by the mean rank of the 18-21 year-old age group with a value of 70.57. The faculty control variable, with a critical mark of 5%, resulted in Business and Economics achieving the highest mean rank at 78.81; it was followed by Engineering with a mean rank of 74.44. The lowest mean rank was recorded for Pharmacy with a rank of 6.00. The *p*-value is 0.029, which expresses the differing views held on this subject by the participants. In the final control variable (degree), those participants possessing a Master's degree achieved the highest mean rank with a value of 121.30;

these participants were followed in ranking by those with a doctoral degree and a value of 75.25. The *p*-value is 0.16.

Table 8.8 examines the significance of the control variables on the statement that 'The economy of Qatar does not spend enough on research and development'.. Thus, under examination are the two control variables of nationality and ethnicity. The nationality control variable is statistically significant at 5% critical level. The non-Qatari nationals scored the highest mean rank at 78.45, followed by the Qatari nationals with a rank of 62.53. The *p*-value is 0.19, which emphasises a disparity in the responses to this statement.

Table 8.8: Significance of Control Variables on the Statements: *Qatari economy does not spend enough for research and development*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy does not spend enough for research and development	Nationality	Qatari Other	62.53 78.45	MWU Test	.019*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.70 74.20 95.37	KW Test	.014*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The ethnicity control variable, being significant at a significance level of 5%, also revealed engaging results for the group that fell beyond the boundaries of Arab ethnicity, as it scored the highest mean rank here through its score of 95.37. This ranking was followed by that of the Arab-non-Qatari group with a score of 74.20. For these group categories the *p*-value is 0.14.

Table 8.9 assesses the significance of control variables for the statement which emphasises that 'Qatar's economy is not doing well and needs change'. Control variables of age, and faculty were taken into consideration. Indeed, the age control variable is significant at 10% significance level, and further, it is the 18-21 year-old age group that scored the highest mean rank with 77.99, followed by the 22-25 year-old age group and their score of 61.16. Such a high rank from the youngest age group suggests underlying frustrations in this area with regard to job opportunities and restrictions in the labour market. In addition, the *p*-value for this set of figures was 0.052.

The faculty control variable, with its significance level of 5%, resulted in the reading of 79.75 for the subcategory dedicated to Other; this was followed by both Art and Science, displaying a rank of 77.59, and *Shari'ah* with a rank of 77.00. This relatively high rank scored by the *Shari'ah* group category potentially reflects the lack of opportunities for *Shari'ah* graduates in Qatar, especially in the context of an economy dominated by financial services and the export of oil and gas. Correspondingly, the *p*-value is 0.036 in this particular case.

Table 8.9: Significance of Control Variables on the Statements: *Qatari economy is not doing well and needs change*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy is not doing well and needs change	Age	18-21 22-25 26-30	77.99 61.16 63.25	KW Test	.052**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	77.59 65.36 75.38 14.00 55.00 77.00 79.75	KW Test	.036*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.10 analyses the significance of control variables in relation to the statement that 'Qatar's economy needs to go through structural change'. The control variables thus analysed here are age and faculty. For the age control variable, exhibiting a significance level of 5%, the grouping of 26-30 year-olds ranked the highest with a mean rank of 109.45; it was followed by the grouping of 22-25 year-olds and their mean rank of 71.02. The *p*-value in this instance was 0.007.

Table 8.10: Significance of Control Variables on the Statements: *Qatari economy needs to go through structural change*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy needs to go through structural change	Age	18-21 22-25 26-30	67.34 71.02 109.45	KW Test	.007*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	64.32 71.14 68.09 106.50 106.50 106.50 93.00	KW Test	.083**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

For the faculty control variable, three of the group categories (Law, Pharmacy, and *Shari'ah*) are significant with 10% significance level with *p*-value of 0.083 and the same mean rank: 106.50. These group categories were followed by Other group category with a mean rank of 92.00.

Table 8.11 explores the significance of control variables on the statement that 'The long-term solution for Qatar is to become an innovation based economy'. The control variables being statistically significant here are faculty and marital status. For the faculty control variable, being significant at *p*-value of 0.073 at 10% significance level, Business and Economics scored the highest mean rank at 81.47, which was followed by Law with a mean rank of 69.30. The lowest mean rank was awarded to Pharmacy with a figure of 32.50.

Table 8.11: Significance of Control Variables on the Statements: *The long-run solution is to be become innovation based knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The long-run solution is to be become innovation based knowledge economy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	58.08 81.47 78.81 69.30 32.50 64.83 56.75	KW Test	.073**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

8.3. DETERMINING FACTORS OF THE PERCEPTIONS ON KNOWLEDGE AND THE KBE

After analysing the perceptions of the participants for the determining factors of the expressed differences in the opinions, this section focuses on knowledge and knowledge based economy aspects of the participants to examine the statistical significance of the differences by using KW and MWU tests.

Table 8.12 examines the significance of control variables with regard to the belief that 'Knowledge can be considered as an economic good'. Age is the only control variable here under observation, demonstrating a significance level of 5%, which is subsequently split into three subgroups. The category for 22-25 year-olds scored the

highest mean rank (84.65); following this development, the ranking of 77.55 was issued to the 26-30 year-old group. The *p*-value is 0.019.

Table 8.12: Significance of Control Variables on the Statements: *Knowledge can be considered as an economic good*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge can be considered as an economic good	Age	18-21 22-25 26-30	64.67 84.65 77.55	KW Test	.019*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.13 queries the significance of control variables on the statement that 'Knowledge is based on the generation and exploitation of knowledge to play the predominant part in the creation of wealth'. The significant control variables are age, faculty, and degree with 5% level of significance. For age control variable, 22-25 year-olds achieved the highest mean rank with a value of 92.38, followed by the age group of 18-21 year-olds with a value of 62.37. The *p*-value is 0.000.

Table 8.13: Significance of Control Variables on the Statements: *Knowledge economy is based on the generation and exploitation of knowledge to play the predominant part in the creation of wealth*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is based on the generation and exploitation of knowledge to play the predominant part in the creation of wealth	Age	18-21 22-25 26-30	62.37 92.38 62.00	KW Test	.000*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	58.90 78.47 73.33 124.00 79.00 43.17 79.00	KW Test	.017*
	Degree	Undergraduate Master Doctorate	73.44 53.30 29.88	KW Test	.054**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The faculty control variable with an estimated *p*-value of 0.17, Law achieved the highest mean rank at 124.00; which is followed by Pharmacy with the mean score of 79.00; the lowest mean rank was scored by *Shari'ah* with a value of 43.17. In the degree control variable, undergraduates scored the highest mean rank at 73.4, which is then followed by those who held a Master's position with a value of 53.30; the lowest

mean rank for this group category was scored by participants doing doctorates, with a value of 29.88. The *p*-value scored by the degree variable is 0.054.

Table 8.14 examines the significance of control variables in relation to the statement that 'A KBE focuses on the most effective use and exploitation of knowledge for all manner of economic activities'. Ranges of control variables are thus applied in this context include: gender, age, faculty, degree, nationality, ethnicity, and class. In the gender control variable, being statistically significant at 5% level with *p*-value of 00.4 the female group category scored the highest mean rank at 84.06, whereas the male category offered a score of 64.46. The age control variable is significant with the *p*-value of 0.001, resulted in 22-25 year-olds achieving the highest mean rank at 88.87; it is followed by the 18-21 year-old age bracket, and the lowest mean rank is awarded to the 26-30 year-old age group with a value of 57.25.

Table 8.14: Significance of Control Variables on the Statements: *Knowledge economy is about the most effective use and exploitation of all types of knowledge in all manner of economic activity*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is about the most effective use and exploitation of all types of knowledge in all manner of economic activity	Gender	Male Female	64.46 84.06	MWU Test	00.4*
	Age	18-21 22-25 26-30	64.16 88.87 57.25	KW Test	.001*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	58.21 91.80 68.99 103.20 85.00 19.00 68.00	KW Test	.001*
	Degree	Undergraduate Master Doctorate	73.78 49.90 22.75	KW Test	.015*
	Nationality	Qatari Other	80.78 64.51	MWU Test	.013*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	82.18 62.27 70.00	KW Test	.014*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	91.88 75.76 67.25 68.40 35.00	KW Test	.050**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The faculty control variable, with a significance level of 5%, resulted in Law degree group achieving the highest mean rank at 103.20, followed by Business and Economics with a value of 91.80. The lowest mean rank in this grouping was scored by *Shari'ah* with a value of 19.00. The *p*-value is the same as that recorded for the age control variable, with a value of 0.001.

The degree control variable, with a statistically significant significance level of 5% and an estimated *p*-value of 0.015, highlights certain differences among the responses of participants to this statement. The undergraduate group category achieved the highest mean rank at 73.78; it is followed by the group category for those with a Master's degree with a value of 49.90. The lowest mean rank is scored by the doctoral subgroup with a value of 22.75. The nationality control variable achieved the highest mean rank at 80.78, followed by that for other nationalities with a score of 64.51. The *p*-value found to be 0.013. The ethnicity control variable, with *p*-value of 0.014, found significant at the significance level of 5%, which resulted in the Arab-Qatari group achieving the highest mean rank at 82.18, followed by the group representing other ethnicities with a value of 70.00. The Arab-non-Qatari group scored a value of 62.27.

Table 8.15: Significance of Control Variables on the Statements: *The idea of the knowledge driven economy is not just a description of high tech industries*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The idea of the knowledge driven economy is not just a description of high tech industries	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	58.19 94.77 71.15 73.70 93.50 20.00 53.67	KW Test	.001*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.15 delves into the significance of control variables on the statement that 'The idea of a KBE does not just offer a description of high tech industries'. The control variables under consideration here is only faculty. The faculty control variable, being significant at 5% with estimated *p*-value of 0.001, resulted in the highest mean rank being scored by Business and Economics, followed by Pharmacy with 93.50; the lowest value is evidenced by *Shari'ah* with a mean rank of 20.00. A similarity was

observed between the mean ranks for Engineering and Law, with values of 71.15 and 73.70.

Table 8.16 analyses the significance of control variables on the statement that suggests 'A KBE describes a set of new sources of competitive advantage which can apply to all sectors, companies, and regions'. There are two control variables proved to be statistically significant for this variable: faculty and degree. For the faculty control variable, with an estimated *p*-value of 0.58 at significance level of 10%, Pharmacy scored the highest mean rank at 125.00 and it was followed by both Business and Economics and Engineering, with values of 83.89 and 70.80. The lowest mean rank was recorded by *Shari'ah* faculty members with a score of 32.67. The result indicates disparities among the data that was collected for this statement.

Table 8.16: Significance of Control Variables on the Statements: *Knowledge economy describes a set of new sources of competitive advantage which can apply to all sectors all companies and all regions*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy describes a set of new sources of competitive advantage which can apply to all sectors all companies and all regions	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.76 83.89 70.80 52.10 125.00 32.67 60.42	KW Test	.058**
	Degree	Undergraduate Master Doctorate	73.11 70.40 19.50	KW Test	.026*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The degree control variable, being significant at 5% level with an estimated *p*-value of 0.026, also highlights the varying opinions directed at this assertion. The highest mean rank is scored by the group for those at a Master's level with a value of 70.40, followed by undergraduates with a value of 73.11; the lowest score was for those pursuing doctorates with a value of 19.50.

Table 8.17 examines the significance of control variables on the statement that 'A KBE best describes the new emerging economic structure of Qatar'.

Table 8.17: Significance of Control Variables on the Statements: *Knowledge economy describes the new emerging economic structure and the future shape of the economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy describes the new emerging economic structure and the future shape of the economy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	56.58 82.52 75.46 71.60 126.50 42.17 69.67	KW Test	.025*

Note: (*) Statistically significant at 5% level

In this analysis, the sole significant control variable is that of faculty with a significant *p*-value of 0.025 at %5 level of significance. The highest mean rank is scored by Pharmacy with a score of 126.50 and it was followed by Business and Economics with a mean rank of 82.52. The lowest mean ranks were scored by both *Shari'ah* and Art and Science faculty groups, with values of 42.17 and 56.58.

Table 8.18 questions the significance of control variables in relation to the statement that 'A knowledge society is a greater concept than what is simply implied by the reductive emphasis on an increased commitment to research and development'. In this analysis, four key control variables were found to be statistically significant at 5% level of significance: faculty, nationality, ethnicity, and class.

Table 8.18: Significance of Control Variables on the Statements: *The knowledge society is a larger concept than just an increased commitment to Research and Development*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The knowledge society is a larger concept than just an increased commitment to Research and Development	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	63.47 79.30 70.81 92.80 121.00 17.67 69.17	KW Test	.038*
	Nationality	Qatari Other	83.61 61.38	MWU Test	.001*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	86.54 58.10 65.60	KW Test	.000*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	97.92 68.62 67.12 101.10 28.20	KW Test	.003*

Note: (*) Statistically significant at 5% level

The faculty control variable, with an estimated *p*-value of 0.038, points to differences in the answers recorded by the questionnaire survey for this particular proposition. The highest mean rank was scored by Pharmacy, with a value of 121.00, and it is followed by Business and Economics with a value of 79.30. The lowest mean ranks are scored by the subgroups for *Shari'ah* and Art and Science, with values of 17.67 and 63.47.

The nationality control variable resulted in the Qatari nationals achieving the highest mean rank at 83.61; the other group category, however, scored 61.38. The *p*-value is 0.001.

The ethnicity control variable, with a statistically significant p-value of .000 at significance level of 5%, resulted in the Arab-Qatari ethnic group achieving the highest mean rank with a value of 86.54; this ranking is followed by one for those participants encapsulated by the Other ethnic category with a score of 65.60. The lowest value is achieved by the Arab-non-Qatari group with a figure of 58.10.

The class control variable with a statistically significant *p*-value of 0.003, resulted in the lower middle class scoring the highest mean rank at 101.10, which is followed by the upper class category with a value of 97.92. The lowest mean rank was scored by the working class subgroup with a value of 28.20.

Table 8.19: Significance of Control Variables on the Statements: *In knowledge economy, knowledge represents the heart of value added from high tech manufacturing and ICTs through knowledge intensive services to the overtly creative industries such as media and architecture*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
In knowledge economy, knowledge represents the heart of value added from high tech manufacturing and ICTs through knowledge intensive services to the overtly creative industries such as media and architecture	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.97 64.28 73.95 107.70 130.50 38.17 72.10	KW Test	.042*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.19 further analyses the significance of control variables on the assertion that 'In a KBE, knowledge represents the heart of value added from high tech manufacturing and ICT through knowledge-intensive services to the overtly creative industries, such as media and architecture'.

In this analysis, only the faculty control variable was found to be significant at significance level of 5% with the *p*-value of 0.042. Pharmacy scored the highest mean rank with a value of 130.50 and was followed in terms of mean rankings by Engineering with a value of 73.95. The lowest mean rank was obtained by *Shari'ah* faculty members with a mean value of 38.17. The results indicate differing opinions voiced by the participants of the questionnaire survey with regard to this subject.

Table 8.20 depicts the findings related to the statement that 'A KBE is the new conceptual fame' with the significant control nationality and ethnicity. The nationality control variable, with a statistically significant *p*-value of 0.087 with significance level of 10%, illustrates a broad range of opinions concerning this topic. For this control variable, the group portraying Qatari nationals scored a mean rank of 77.93 and the subgroup allocated to other nationalities scored a value of 66.66. Under the ethnicity control variable, with a statistically significant *p*-value of 0.090 at a significance level of 10%, the Arab-Qatari ethnic group obtained a mean rank of 79.80, which was followed by the Other ethnic group at 67.80. The Arab-non-Qatari ethnic group scored the lowest mean rank with a value of 64.90.

Table 8.20: Significance of Control Variables on the Statements: *Knowledge economy is the new conceptual fame*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is the new conceptual fame	Nationality	Qatari Other	77.93 66.66	MWU Test	.087**
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.80 64.90 67.80	KW Test	.090**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.21 analyses the significance of control variables on the statement which suggests that 'A KBE is only a possibility for technologically developed countries'. In this case, there are three control variables to be examined: gender, nationality, and ethnicity.

Table 8.21: Significance of Control Variables on the Statements: *Knowledge economy is only for the technologically developed countries*

Statement	Control Variables	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is only for the technologically developed countries	Gender	Male Female	76.71 62.20	MWU Test	.037*
	Nationality	Qatari Other	62.66 78.16	MWU Test	.022*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.97 74.86 90.63	KW Test	.036*

Note: (*) Statistically significant at 5% level; (**) statistically significant at 10%

The gender control variable, with a significance level of 5%, resulted in the group representing male gender obtaining the highest mean rank at 76.71; the ranking for the female gender group was, however, lower at 62.20. The *p*-value is 0.037. For the nationality control variable, those under the label of Other obtained the highest mean rank with a value of 78.16; Qatari nationals conversely scored a value of 62.66. The significance value is 5% and the *p*-value is 0.022.

Finally, the ethnicity control variable, with a statistically significant estimated *p*-value of 0.036 at significance level of 5%, produced the highest mean rank for the Other category, with a value of 90.63; this rating was followed by that of the Arab-non-Qatari ethnic group with a mean rank of 74.86. The lowest rank was registered for the Arab-Qatari ethnic group with a value of 62.97.

Table 8.22: Significance of Control Variables on the Statements: *Knowledge economy is only related with technological development*

Statement	Control Variables	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is only related with technological development	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	74.44 79.19 71.05 25.00 39.00 90.50 55.58	KW Test	.065**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	103.58 65.77 68.86 48.30 74.80	KW Test	.021*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.22 depicts the results of the significance test of control variables on the statement that 'A KBE is only related with technological development', for which two control variables faculty and class found to be statistically significant at 10% and 5% significance level with *p*-values of 0.065 and 0.021 respectively.

The faculty control variable shows that *Shari'ah* faculty securing the highest mean rank with a value of 90.50; followed by that of Business and Economics with a value of 79.19. The class control variable resulted in the highest mean rank being scored by the upper class group with a value of 103.58; which is followed by the working class category with a value of 74.80. Further, the lowest mean rank was scored by the lower middle class group with a value of 48.30.

Table 8.23 presents the results of assessing the significance of control variables on the statement emphasising that 'Knowledge is the new source of economic value and growth'. The control variables proved to be statistically significant were gender, faculty, nationality, and ethnicity with 5% level of statistical significance.

Table 8.23: Significance of Control Variables on the Statement: *Knowledge is the new source of economic value and growth*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge is the new source of economic value and growth	Gender	Male Female	59.58 81.86	MWU Test	.001*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	63.95 76.40 68.52 92.80 97.25 15.00 39.00	KW Test	.023*
	Nationality	Qatari Other	77.51 60.62	MWU Test	.009*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	76.78 58.40 74.79	KW Test	.019*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The gender control variable, with *p*-value is 0.001, resulted in the group representing female group achieving the highest mean rank at 81.86, and, in comparison, the group for the male gender scored 59.58.

The faculty control variable, with a statistically significant *p*-value of 0.023, resulted in the highest mean rank with Pharmacy group with a value of 97.25, followed by Law with a value of 92.80. The lowest mean scores were obtained by *Shari'ah* and the Other category with mean ranks of 15.00 and 39.00, respectively.

The nationality control variable, with a statistically significant *p*-value of 0.009, resulted in the highest mean rank being achieved by the category for Qatari nationals with a value of 77.51; other nationalities scored a mean rank of 60.62. The ethnicity control variable with the *p*-value is 0.19 resulted in the highest mean rank being achieved by the group representing Arab-Qatari ethnicity with a value of 76.78; the category assigned to the Arab-non–Qatari ethnic group obtained a value of 58.40.

8.4. DETERMINING FACTORS OF THE PERCEPTIONS ON QATAR AS A KBE

The previous section discussed determining factors of the differences in the opinions of the participants in relation to knowledge economy related issues. This, section presents the results for knowledge economy issues in relation to Qatar as a knowledge based economy or KBE.

Table 8.24: Significance of Control Variables on the Statements: *Qatar must develop a knowledge economy to remain globally competitive*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar must develop a knowledge economy to remain globally competitive	Gender	Male Female	65.36 82.46	MWU Test	.013*
	Age	18-21 22-25 26-30	65.21 85.40 63.65	KW Test	.016*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	69.50 88.98 67.08 87.50 67.50 9.67 50.67	KW Test	.009*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	71.13 74.41 71.79 66.30 23.40	KW Test	.093**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.24 depicts the significance of control variables on the statement that 'Qatar must develop a KBE in order to remain globally competitive'. The control variables found to be significant for this statement are gender, age, faculty, and class. The gender control variable, with *p*-value of 0.013 and being statistically significant at the significance level of 5%, resulted in the highest mean rank being obtained by the group for female gender with a value of 82.46; the group designated for male gender correspondingly held a value of 65.36.

The age control variable resulted in the 22-25 year-old age group obtaining the highest mean rank with a value of 85.40; followed by the 18-21 year-old age group with a value of 65.21. The lowest mean rank recorded here was secured by the 26-30 year-old group with a value of 63.65. The *p*-value of 0.16 being statistically significant at the significance level of 5%.

The faculty control variable, with a statistically significant estimated *p*-value of 0.009, resulted in Business and Economics group members achieving the highest mean rank with a value of 88.98; Law followed this ranking with a value of 87.50. Thus, the results identify a clear distinction between the answers of the participants.

Table 8.25 depicts the results of the analysis on the statement that 'The strategies of a KBE can overcome Qatar's problem of being a non-productive economy', for which the sole control variable found to be statistically significant at significance level of 10% with 0.069 Here, the highest mean rank was scored by the upper middle class grouping with a value of 76.81 and this was somewhat echoed by the rating of 72.52 for the middle class group category.

Table 8.25: Significance of Control Variables on the Statements: *Knowledge economy strategy can overcome Qatar's problem of being a non-productive economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy strategy can overcome Qatar problem of being a non-productive economy	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	61.58 76.81 72.52 53.40 29.50	KW Test	.069**

Note: (**) Statistically significant at 10%

The lowest mean ranks were witnessed in the figures for the working class subgroup and the lower middle class subgroup, with values of 29.50 and 53.40. The *p*-value is 0.069, again reflecting the range of responses from the different subgroups towards this control variable.

Table 8.26 analyses the significance of control variables in the context of the statement that 'The label of a KBE best describes the new emerging economic structure and future shape of Qatar's economy'.. The control variables for the statement under consideration are gender, nationality, and class. Gender, as a control variable with a significance level of 10%, saw the female group category secure the highest mean rank at 78.25; the subgroup representing males scored the somewhat lesser value of 66.89. The *p*-value is 0.087.

The nationality control variable, with a significance level of 10%, resulted in the Qatari subgroup achieving the highest mean rank through its value of 78.04; nationalities that came under the bracket of Other correspondingly achieved a value of 65.78. The *p*-value is 0.057.

Table 8.26: Significance of Control Variables on the Statements: *Knowledge economy describes the new emerging economic structure and the future shape of the economy for Qatar*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy describes the new emerging economic structure and the future shape of the economy for Qatar	Gender	Male Female	66.89 78.25	MWU Test	.087**
	Nationality	Qatari Other	78.04 65.78	MWU Test	.057**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	64.79 76.78 69.77 80.60 26.90	KW Test	.076**

Note: (**) Statistically significant at 10%

Table 8.27 explores the significance of control variables with regard to the statement that insinuates 'The development of a KBE is the only way for Qatar to survive and have a sustainable economy'. There were two variables to be discussed in the light of

this suggestion, namely, nationality and ethnicity. The nationality control variable, with a significance level of 5%, resulted in the highest mean rank (79.13) being awarded to the subgroup representing other nationalities, whereas the category signifying those of Qatari nationality held the value of 61.37. The *p*-value is 0.008.

Table 8.27: Significance of Control Variables on the Statements: *Developing knowledge economy is the only way for Qatar to survive and have a sustainable economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Developing knowledge economy is the only way for Qatar to survive and have a sustainable economy	Nationality	Qatari Other	61.37 79.13	MWU Test	.008*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.02 78.51 78.10	KW Test	.051**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The ethnicity control variable proved to be statistically significant at 10% with *p*-value being 0.051, resulted in the Arab-non-Qatari group achieving the highest mean rank with a value of 78.51; the Other subgroup similarly scored a value of 78.10, yet the lowest mean rank was acquired by the Arab-Qatari ethnic group, holding a value of 62.02. The results indicate diverging opinions on the topic in question.

In furthering the analysis, Table 8.28 examines the significance of control variables on the assertion that 'As Qatar must diversify its economy, the only way it can be strong and compete on a global level is through its development of a KBE'. There were two control variables with regard to the aforementioned assertion, namely, gender and age.

The gender control variable proved to be statistically significant with a *p*-value 0.026 at the significance level of 5%. As the results show female group securing the highest mean rank with a figure of 83.03, and this was followed by the male gender subgroup with a value of 65.04. The *p*-value is 0.008. The age control variable, with a significance level of 5%, resulted in the 22-25 year-old age group obtaining the highest mean rank at 84.06; the lowest mean rank recorded was that of the 26-30 year-old age group with a value of 57.65.

Table 8.28: Significance of Control Variables on the Statements: *Since Qatar has to diversify its economy the only way it can be globally strong and competitive is to develop a knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Since Qatar has to diversify its economy the only way it can be globally strong and competitive is to develop a knowledge economy	Gender	Male Female	65.04 83.03	MWU Test	.008*
	Age	18-21 22-25 26-30	66.60 84.06 57.65	KW Test	.026*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.29 considers the significance of control variables on the statement that 'Qatar does not have a knowledge base from which to develop a KBE'. Such control variables as gender, age, faculty, and nationality are investigated in the following analysis.

Table 8.29: Significance of Control Variables on the Statements: *Qatar does not have a knowledge base to develop its knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar does not have a knowledge base to develop knowledge economy	Gender	Male Female	76.20 63.11	MWU Test	.059**
	Age	18-21 22-25 26-30	76.41 57.91 89.90	KW Test	.012*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	81.99 65.84 70.59 23.60 27.00 84.50 90.08	KW Test	.021*
	Nationality	Qatari Other	59.93 80.22	MWU Test	.003*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	89.08 60.50 69.52 88.20 98.10	KW Test	.069**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The gender control variable, being significant with *p*- value of 0.059 at a significance level of 10%, meant that in the context of this particular statement the male subgroup achieved the highest mean rank with a value of 76.20, whereas the female subgroup

obtained a value of 63.11. As for the age control variable, it obtained the highest mean rank (89.90) for the group category assigned to 26-30 year-olds; the lowest mean rank (57.91) was found in the subgroup for 22-25 year-olds. Hence, age control variable is significant with *p*-value of 0.012 at 5% confidence level.

The faculty control variable, with a statistically significant significance level of 5%, resulted in the highest mean rank being achieved by the Other group category (90.08). This mean rank was followed by that for the Shari'ah subgroup at 84.50. The lowest mean ranks from this control variable were those bestowed on Law and Pharmacy, with values of 23.60 and 27.00. The *p*-value is 0.021. In addition, the nationality control variable, with a significance level of 5%, caused the highest mean rank to appear in the subgroup for other nationalities with a value of 80.22; the group category assigned to Qatari nationality weighed in at the lesser figure of 59.93. The *p*-value is 0.003.

Table 8.30 assesses the significance of control variables on the statement which suggests that 'As Qatar does not have a technological base, it cannot develop into a KBE'. Faculty, nationality, ethnicity, and class are the statistically significant control variables for this assessment.

Table 8.30: Significance of Control Variables on the Statements: *Since Qatar does not have a technological base it cannot developed into a knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Since Qatar does not have technological base it cannot developed into a knowledge economy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	92.85 59.88 69.48 24.10 27.25 72.33 67.08	KW Test	.001*
	Nationality	Qatari Other	64.82 76.53	MWU Test	.082**
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	65.32 80.47 56.17	KW Test	.028*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	99.42 58.92 70.80 61.70 90.80	KW Test	.022*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The faculty control variable, being significant at 5%7 with *p*-value of 0.001, ensured that Art and Science secured the highest mean rank with a value of 92.85; this was then followed by *Shari'ah* and Engineering faculties with values of 72.33 and 69.48. The lowest mean rank was obtained by Law with a value of 24.10. In addition, the nationality control variable, being significant at 10% with *p*-value of 0.082, resulted in the highest mean rank being awarded to the Other subgroup with a value of 76.53, yet in comparison, the group category assigned to Qatari nationality achieved a value of 64.82.

The ethnicity control variable, proved to be significant at 5%, resulted in the Arab-non-Qatari ethnic group scoring the highest mean rank with a value of 80.47, followed by the Arab-Qatari ethnic group with a value of 65.32. The lowest value is obtained by the category assigned to Other ethnicity with a value of 56.17. The class control variable, being significant at 5%, resulted in the upper class subgroup achieving the highest mean rank with a value of 99.42, followed by that of the working class category with a value of 90.80. The lowest value is recorded for the upper middle class subgroup with a value of 58.92. The *p*-value is 0.022.

Table 8.31: Significance of Control Variables on the Statements: *Qatar does not have the capacity of the necessary professional skills to become a knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar does not have the capacity of the necessary professional skills to become a knowledge economy	Gender	Male Female	75.86 63.72	MWU Test	.082**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	85.45 67.17 69.78 25.70 89.00 67.00 54.25	KW Test	.038*
	Nationality	Qatari Other	63.69 77.38	MWU Test	.043*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.62 78.59 75.37	KW Test	.073**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.31 shows the significance of control variables on the assertion that 'Qatar does not have the necessary professional skills to become a KBE'. Four control variables proved to be significant at 5% and 10% level: gender, faculty, nationality, and ethnicity.

The faculty control variable, with a statistically significant significance level of 5%, resulted in Pharmacy obtaining the highest mean rank at 89.00, followed by both Art and Science and Engineering with a values of 85.45 and 69.78. The lowest rank in this grouping was that of Law with a value of 25.70. The *p*-value for this control variable was 0.038.

The nationality control variable, being significant at significance level of 5% with *p*-value of 0.043, resulted in the highest mean rank being obtained by the Qatari nationals group with a value of 63.69; other nationalities scored a value of 77.38. The. The ethnicity control variable, with a significance level of 10%, resulted in the highest mean rank being obtained by the Arab-non-Qatari subgroup with a value of 78.59; the lowest value is correspondingly obtained by those in the Other ethnicity grouping with a value of 75.37. The *p*-value is 0.073, thereby denoting a wide array of responses to the question that was presented to the participants of the survey.

Table 8.32 reports the findings related to the significance of certain control variables on the belief that 'A KBE offers one of the few possible options for Qatar's future'. The control variables under investigation are faculty and degree. In the faculty control variable, being significant at 5% with *p*-value of 0.003, the highest mean rank was obtained by Art and Science faculty members with a value of 87.45, followed by Business and Economics with a value of 70.73. The lowest mean ranks were awarded to Law and Shari'ah with values of 9.60 and 49.67.

Table 8.32: Significance of Control Variables on the Statements: *Knowledge economy is only one of the options for Qatar future*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy is only one of the options for Qatar future	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	87.45 70.73 67.88 9.60 65.00 49.67 69.75	KW Test	.003*
	Degree	Undergraduate Master Doctorate	71.20 101.60 43.75	KW Test	.090**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.33 examines the significance of control variables on the assertion that 'Qatar will survive without a KBE'. The control variables proved to be significant for this statement is only degree.

Table 8.33: Significance of Control Variables on the Statements: *Qatar will survive without knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar will survive without knowledge economy	Degree	Undergraduate Master Doctorate	71.50 99.40 36.63	KW Test	.058**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As can be seen in Table 8.33, the degree control variable, with a significance level of 10%, resulted in the highest mean rank being secured by those participants in the category for a Master's degree with a value of 99.40; this was followed by the undergraduate subgroup ranking at a value of 71.50. The lowest rank was held by the doctoral subgroup with a value of 36.63. The *p*-value is 0.058.

Table 8.34 analyses the significance of control variables on the statement, which declares that 'A KBE cannot bring any positive change for Qatar'. The control variables under examination are age, nationality, and ethnicity. In the age control variable, with a significance level of 5%, the highest mean rank was achieved by 18-21 year-olds with a mean rank of 78.32; the lowest mean rank was for 22-25 year-olds with a value of 58.03. The *p*-value is 0.017.

Table 8.34: Significance of Control Variables on the Statements: *Knowledge economy cannot bring any positive change for Qatar*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Knowledge economy cannot bring any positive change for Qatar	Age	18-21 22-25 26-30	78.32 58.03 64.40	KW Test	.017*
	Nationality	Qatari Other	61.57 78.19	MWU Test	.013*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.45 75.73 84.37	KW Test	.063**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As can be seen in Table 8.34, the nationality control variable, being significant at 5%, resulted in those nationalities under the Other grouping securing the highest mean rank with a value of 78.19, followed by those participants of Qatari nationality with a value of 61.57. The *p*-value is 0.013. With the ethnicity control variable at a statistically significant significance level of 10%, the highest mean rank went to those participants under the label of Other with a value of 84.37, followed by the ethnic group for Arab-non-Qatari with a value of 75.73. The lowest mean rank went to the Arab-Qatari ethnic category with a value of 62.45. The *p*-value is 0.063, which also emphasises the variety of opinions expressed by the participants towards this particular issue.

8.5. DETERMINING FACTORS OF THE PERCEPTIONS ON QATARI ECONOMY AND SOCIETY'S READINESS FOR KNOWLEDGE ECONOMY

Table 8.35 examines the significance of control variables on the statement that 'Qatar's economic development strategy indicates that the economy and society supports a KBE' with the significant control variables of gender, faculty, degree, and class.

Table 8.35: Significance of Control Variables on the Statements: *The Qatari economic development strategy indicates that the economy and society supports the knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The Qatari economic development strategy indicates that the economy and society supports the knowledge economy	Gender	Male Female	67.25 79.08	MWU Test	.085**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	60.55 86.33 74.40 84.40 94.50 35.50 36.58	KW Test	.012*
	Degree	Undergraduate Master Doctorate	73.62 47.00 31.50	KW Test	.039*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	71.54 73.89 73.06 50.00 22.00	KW Test	.043*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The faculty control variable, with a significance level of 5%, resulted in Pharmacy securing the highest rank with a value of 94.50, followed by both Business and Economics and Law with values of 86.33 and 84.40. The lowest mean ranks went to *Shari'ah* and the category representing Other with values of 35.50 and 36.58. The *p*-value is 0.012.

The degree control variable, being significant at 5% level, resulted in the highest mean rank going to the subgroup for undergraduates with a value of 73.62; this was followed by those participants doing a Master's degree with a value of 47.00. The *p*-value is 0.039. For the class control variable being significant at 5%, the upper middle class group obtained the highest mean rank with a value of 73.89, followed by the middle class group with a value of 73.06. The lowest mean ranks were scored by the categories for the working class and lower middle class, with values of 22.00 and 50.00. The *p*-value is 0.043.

Table 8.36: Significance of Control Variables on the Statements: *Qatari economy and society is ready to work towards the knowledge economy in terms of education*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy and society is ready to work towards the knowledge economy in terms of education	Gender	Male Female	64.13 84.65	MWU Test	.003*
	Age	18-21 22-25 26-30	70.91 79.70 39.70	KW Test	.015*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	55.00 84.20 75.89 108.40 94.00 28.50 54.00	KW Test	.00*
	Degree	Undergraduate Master Doctorate	73.87 32.80 41.13	KW Test	.023*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	93.75 74.61 68.22 45.90 45.90	KW Test	.064**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.36 explores whether the control variables with regard to the statement that 'Qatar's economy and society are ready to work towards a KBE in terms of

education' are significant. Multiple control variables found to be significant in the light of this assertion include: gender, age, faculty, degree, and class.

As can be seen in Table 8.36, the gender control variable, being significant at 5%, resulted in the highest mean rank being secured by the grouping associated with female gender at 84.65; the grouping for male gender, however, obtained a mean rank of 64.13. The *p*-value is 0.003. The age control variable, being significant at a significance level of 5% with *p*-value of 0.015, resulted in the highest mean rank being achieved by 22-25 year-olds with a value of 79.70 and this was followed by 18-21 year-olds with a value of 70.91. The lowest mean rank went to 26-30 year-olds with a value of 39.70.

The faculty control variable, with being significant at 5%, resulted in the highest mean rank going to Law with a value of 108.40, followed by both Pharmacy and Business and Economics with values of 94.00 and 84.20. The lowest values went to *Shari'ah*, at 28.50, and to the Other category with a value of 54.00. The *p*-value is 0.00.

The degree control variable, being significant at 5% with *p*-value of 0.023, resulted in the highest mean rank going to the undergraduate subgroup with a value of 73.87; it was then followed by the category for those possessing a doctoral degree with a value of 41.13. The lowest mean rank was awarded to the group for those with a Master's degree at a value of 32.80.

Table 8.37 evaluates the significance of control variables on the statement that 'Qatar's economy and society are ready to work towards economy KBE with regard to the development of professional skills'. Control variables of gender, age, faculty, nationality, ethnicity, and class were found to be significant. The gender control variable, being significant at 5% with *p*-value of 0.023, resulted in the highest mean rank going to the grouping for female gender with a value of 79.92; in comparison, the grouping for male gender secured a figure of 65.94. The *p*-value is 0.041. Being significant at 5% level of significance, the age control variable resulted in the age group for 22-25 year-olds obtaining the highest mean rank with a value of 81.60, followed by the age group for 18-21 year-olds with a mean rank of 67.53. The lowest

mean rank was scored by the category designated for 26-30 year-olds with a value of 53.10. The *p*-value is 0.047.

As the results in Table 8.37 depicts, the faculty control variable, with a statistically significant significance level of 10%, resulted in the highest mean rank going to Law with a value of 103.90, followed by both Pharmacy and Business and Economics with values of 87.50 and 79.61. The lowest mean ranks were for *Shari'ah* and Art and Science, with values of 22.33 and 65.47. The *p*-value is 0.086, which again suggested the presence of differing opinions on this particular topic.

Table 8.37: Significance of Control Variables on the Statements: *Qatari economy and society is ready to work towards the knowledge economy in terms of development of professional skills*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari economy and society is ready to work towards the knowledge economy in terms of development of professional skills	Gender	Male Female	65.94 79.92	MWU Test	.041*
	Age	18-21 22-25 26-30	67.53 81.60 53.10	KW Test	.047*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	65.47 79.61 68.86 103.90 87.50 22.33 71.08	KW Test	.086**
	Nationality	Qatari Other	80.11 64.06	MWU Test	.015*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	82.68 61.95 64.07	KW Test	.009*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	86.00 69.70 70.54 71.00 24.20	KW Test	.056**

Note: (*) Statistically significant at 5% level; (**) statistically significant at 10%

The nationality control variable, with the significance level of 5%, resulted in the highest mean rank going to the group for Qatari nationality with a value of 80.11; participants belonging to the Other category received a rank of 64.06. The *p*-value is 0.015. The ethnicity control variable, with a significance level of 5%, resulted in the highest mean rank being taken by the Arab-Qatari ethnic group with a value of 82.68 and it was followed by those participants designated as belonging to a non-Arab (or

Other) ethnic group with a value of 64.07. The lowest mean rank went to the Arab-non-Qatari ethnic group with a value of 61.95. The *p*-value is 0.009. The class control variable, with a significance level of 10%, resulted in the highest mean rank going to the upper class category with a value of 86.00 and it was followed by the lower middle class category with a value of 71.00. The lowest mean ranks were located in the working and upper middle class groups with values of 24.00 and 69.70. The *p*-value is 0.056.

8.6. DETERMINING FACTORS ON THE PERCEPTIONS ON THE ADEQUACY OF QATARI EDUCATION FOR KBE

Table 8.38 examines the significance of the control variables on the statement that 'Educational development in Qatar can respond to the demand of a KBE'. The control variables found to be significant for this statement are gender, faculty, degree, nationality, and ethnicity. The gender control variable, being significant at 5% with *p*-value of 0.017, resulted in the highest mean rank going to the group for female gender, with a value of 80.15, and, by extension, the group for male gender obtained the lesser value of 64.12. The faculty control variable, with a significance level of 10%, resulted in Law achieving the highest mean rank with a value of 96.50, followed by Pharmacy and Business and Economics with values of 88.50 and 77.50. The lowest mean ranks were for the Other subgroup and that of *Shari'ah* with values of 32.00 and 34.00. The *p*-value is 0.067, indicating differences between the responses from the participants towards this suggestion.

The degree control variable, with a significance level of 5%, resulted in the highest mean rank (73.00) going to those participants possessing a Master's degree; it was followed by the figure for the undergraduate degree group at 71.83. The lowest value is recorded for the group representing doctoral students with a value of 6.75. The *p*-value is 0.003.

The nationality control variable was found to be significant at 5% with *p*-value of 0.023, resulted in the highest mean rank (78.43) going to those questionnaire participants of Qatari nationality; this ranking was then followed by the subgroup for those belonging to other nationalities with a value of 63.60. In addition, the ethnicity

control variable, with a significance level of 5%, resulted in the highest mean ranks being recorded for the Arab-Qatari ethnic group and the Other ethnic group, with values of 78.03 and 74.67. The lowest mean rank went to the Arab-non-Qatari ethnic group with a value of 61.63. The *p*-value is 0.049.

Table 8.38: Significance of Control Variables on the Statements: *Educational development in Qatar can respond to the demand of the knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Educational development in Qatar can respond to the demand of the knowledge economy	Gender	Male Female	64.12 80.15	MWU Test	.017*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	68.59 77.50 68.87 96.50 88.50 34.00 32.60	KW Test	.067**
	Degree	Undergraduate Master Doctorate	71.83 73.00 6.75	KW Test	.003*
	Nationality	Qatari Other	78.43 63.60	MWU Test	.023*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	78.03 61.63 74.67	KW Test	.049*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.39 analyses the significance of control variables on the statement that 'Qatar's universities provide knowledge and skills for their students'. A number of control variables proved to be significant: age, faculty, degree, nationality, ethnicity, and class.

The age control variable, being significant at 10% with *p*-value of 0.052, resulted in the highest mean rank going to 22-25 year-olds with a value of 81.93 and the lowest mean rank went to 26-30 year-olds with a value of 55.85. The faculty control variable found to significant at 5% resulted in the highest mean rank being presented to Business and Economics with a value of 87.52, followed by Pharmacy with a value of 81.00. The lowest mean ranks in this control variable were registered for *Shari'ah* and the Other subgroup with values of 30.33 and 51.67. The *p*-value is 0.024.

Table 8.39: Significance of Control Variables on the Statements: *Qatar universities provide knowledge and skill for their students*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar universities provide knowledge and skill for their students	Age	18-21 22-25 26-30	67.21 81.93 55.85	KW Test	.052**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	61.25 87.52 73.66 53.70 81.00 30.33 51.67	KW Test	.024*
	Degree	Undergraduate Master Doctorate	72.96 67.90 10.25	KW Test	.006*
	Nationality	Qatari Other	81.60 62.92	MWU Test	.004*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	81.93 60.50 73.47	KW Test	.008*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	88.00 70.32 68.79 85.50 28.30	KW Test	.048*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The degree control variable, being significant at 5% with *p*-value of 0.006, resulted in the highest mean rank being taken by those participants possessing an undergraduate degree with a value of 72.96; this ranking was followed by the subgroup for those with a Master's degree, with a value of 67.90. The lowest value is taken by doctoral students with a value of 10.25.

The nationality control variable, with a significance level of 5%, resulted in the group representing Qatari nationals achieving the highest mean rank with a value of 81.60; it was subsequently followed by the rating for the Other nationalities subgroup at 62.92. The *p*-value is 0.004. The ethnicity control variable found to be significant at 5% resulted in the highest mean rank going to the Arab-Qatari ethnic group with a mean rank of 81.93 and this was followed by the rating for the Other ethnic group with a value of 73.47. The lowest mean rank was for the Arab-non-Qatari ethnic group with a value of 60.50. The *p*-value is 0.008. For the class control variable, with a significance level of 5%, the highest mean rank was achieved by the upper class group with a value of 88.00 and it was followed by the category for the lower middle

class with a value of 85.50. The lowest mean ranks were registered for the working class and middle class subgroups, with values of 28.30 and 68.79. The *p*-value is 0.048.

Table 8.40 examines the significance of control variables on the statement which suggests that 'Theoretical knowledge is supported by empirical knowledge and practical skills in Qatar's universities'. The control variables found to be significant are age, faculty, degree, and class. The age control variable, with a significance level of 5%, resulted in the highest mean rank being taken by 22-25 year-olds with a value of 87.01 and the lowest rank went to 26-30 year-olds with a value of 37.95. The *p*-value is 0.000. The faculty control variable, with a significance level of 5%, resulted in the highest mean rank going to Law with a value of 99.70, followed by Pharmacy and Business and Economics with values of 91.50 and 81.14. The lowest mean ranks were assigned to *Shari'ah* and the Other subgroup, with values of 21.00 and 43.83. The *p*-value is 0.014.

Table 8.40: Significance of Control Variables on the Statements: *Theoretical knowledge is supported with empirical knowledge and practical skills in the Qatari universities*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Theoretical knowledge is supported with empirical knowledge and practical skills in the Qatari universities	Age	18-21 22-25 26-30	67.33 87.01 37.95	KW Test	.000*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	62.10 81.14 75.04 99.70 91.50 21.00 43.83	KW Test	.014*
	Degree	Undergraduate Master Doctorate	73.15 75.50 11.50	KW Test	.007*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	94.54 76.99 66.77 64.60 31.10	KW Test	.018*

Note: (*) Statistically significant at 5% level

As can be seen in Table 8.40, the degree control variable, being significant at 5% with p-value of 0.007, resulted in the highest mean rank being awarded to the category representing those participants holding a Master's degree, with a value of 75.50, and it was followed by the category for those possessing an undergraduate degree with a value of 73.15. The lowest mean rank was for doctoral students with a value of 11.50. In terms of the class control variable, the significance value is 5% and the highest mean rank was taken by the upper class group with a value of 94.54; it was followed by that of the upper middle class group with a value of 76.99. The lowest mean ranks were taken by the working class and lower middle class, with values of 31.10 and 64.60. The *p*-value is 0.018.

Table 8.41 explores the significance of control variables on the statement which suggests that 'Universities in Qatar provide self-confidence through the teaching of contemporary knowledge' with the significant control variables of age, degree, nationality, ethnicity, and class. The age control variable, found to be statistically significant at a significance level of 5% with the *p*-value of 0.017; the highest mean rank went to 22-25 year-olds with a value 80.18 and the lowest mean rank went to 26-30 year-olds with a mean rank of 41.50.

Table 8.41: Significance of Control Variables on the Statements: *Universities in Qatar provide self-confidence through teaching the most up-to-date knowledge*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Universities in Qatar provides self-confidence through teaching the most up-to-date knowledge	Age	18-21 22-25 26-30	69.63 80.18 41.50	KW Test	.017*
	Degree	Undergraduate Master Doctorate	72.92 69.70 9.25	KW Test	.006*
	Nationality	Qatari Other	79.07 64.84	MWU Test	.033*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	81.05 62.91 66.40	KW Test	.032*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	89.29 79.92 65.57 55.30 38.70	KW Test	.035*

Note: (*) Statistically significant at 5% level

Being statistically significant at 5% level, in the case of the degree control variable, the highest mean rank was achieved by the group for those participants with an undergraduate degree at the value of 72.92; it was followed by the group representing those with a Master's degree with a value of 69.70. The lowest value (9.25) went to the category for those with a doctorate. The *p*-value is 0.006. The nationality control variable, being significant at 5% level and; the highest mean rank went to the group representing Qatari nationals with a value of 79.07; other nationalities achieved the lower value of 64.84. The *p*-value is 0.033. The ethnicity control variable with the significance level of 5% and; the highest mean rank went to the Arab-Qatari ethnic group with a value of 81.05; it was followed by the ethnic group designated for non-Arab (or Other) participants with a value of 66.40. The lowest rank went to the Arab-non-Qatari ethnic group with a value of 62.91. The *p*-value is 0.032. For the class control variable with a significance level of 5% and; the highest mean rank was scored by the category for the upper class with a value of 89.29 and it was followed by the category for the upper middle class with a value of 79.92. The lowest mean ranks were evidenced by the working class and lower middle class with values of 38.70 and 55.30. The *p*-value is 0.035.

Table 8.42: Significance of Control Variables on the Statements: *Qatari universities are research based universities contributing to knowledge development*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari universities are research based universities contributing to knowledge development	Age	18-21 22-25 26-30	70.76 78.18 47.85	KW Test	.080**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	60.09 84.56 76.40 71.30 94.50 36.17 41.25	KW Test	.024*
	Degree	Undergraduate Master Doctorate	73.43 53.30 30.13	KW Test	.051*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	98.29 73.14 67.37 67.00 38.50	KW Test	.032*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.42 examines the significance of control variables on the assertion that 'Qatari universities are research-based and contribute to the development of knowledge'. The faculty control variable with a significance level of 5% and that, Pharmacy took the highest mean rank with a value of 94.50 and was followed by Business and Economics with a value of 84.56. The lowest mean ranks were presented to *Shari'ah* and the Other category, with values of 36.17 and 41.25. The *p*-value is 0.024.

For the degree control variable with a significance level of 5%, the highest mean rank was scored by those possessing an undergraduate degree with a mean value of 73.43 and this ranking was followed by those participants who held a Master's degree with a value of 53.30. The lowest value (30.13) was assigned to those participants with doctorates. The *p*-value is 0.051. In addition, the class control variable found to be significant at 5% and the highest mean rank went to the upper class group with a value of 98.29; this was followed by that of the upper middle class group with a value of 73.14. The lowest mean ranks were demonstrated by the working class and lower middle class subgroups, with values of 38.50 and 67.00. The *p*-value is 0.032.

Table 8.43: Significance of Control Variables on the Statements: *The aim of university education in Qatar is not only graduating students but also helping them to develop skills so that they can be employable*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The aim of university education in Qatar is not only graduating students but also helping them to develop skills so that they can be employable	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	65.50 82.33 74.25 38.80 126.00 23.83 60.50	KW Test	.017*
	Nationality	Qatari Other	78.30 66.38	MWU Test	.077**
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	80.19 64.39 68.50	KW Test	.079**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	87.46 77.36 67.69 62.20 32.90	KW Test	.072**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

In developing analysis further, Table 8.43 explores the significance of control variables in relation to the statement that 'The aim of university education in Qatar is

not only to create graduates, but also to help these same students develop skills so that they are employable'. The control variables, which found to be significant are faculty, nationality, ethnicity, and class. The faculty control variable, being significant at 5% with *p*-value of 0.017, shows that the highest mean ranks were listed for Pharmacy and Business and Economics, with mean scores of 126.00 and 82.33 respectively. The lowest mean ranks were recorded for *Shari'ah* and Law faculty groups with mean scores of 23.83 and 38.80.

For the nationality control variable, with a significance level of 10% and; the highest mean ranks were found in the Qatari nationality subgroup and that of other nationalities, with the respective values of 78.30 and 66.38. The *p*-value is 0.077, which further indicates a disparity between participants' responses to this statement. The ethnicity control variable is found to be significant with a significance level of 10%, the highest mean rank went to the Arab-Qatari ethnic group with a value of 80.19 and it was followed by the subgroup for other (non-Arab) ethnicities with a value of 68.50. The lowest mean rank went to the Arab-non-Qatari ethnic group with a value of 64.39. The *p*-value is 0.079.

Table 8.44 analyses the significance of control variables on the statement that 'The university education of Qatar helps students to develop critical thinking in any subject'. The control variables found to be significant at various levels are faculty, nationality, and class. The faculty control variable, with a significance level of 5%, resulted in the highest mean rank being found in the subgroup for Pharmacy with a value of 125.50; it was followed by Business and Economics with a value 84.25. The lowest mean rank was for Law with a value of 43.00; the category assigned to Other came somewhat higher with a figure of 48.33. The *p*-value is 0.047.

The nationality control variable, with a significance level of 10%, resulted in the highest mean rank going to Qatari nationals with a value of 78.98; other nationalities achieved the lower rank of 65.87. The *p*-value is 0.051. The class control variable, with a significance level of 5%, and highest mean rank went to the category for the lower middle class participants with a value of 91.70; this was closely echoed by the value of 91.33 for the upper class category. The lowest mean ranks were recorded for

the working class and middle class categories with values of 36.50 and 66.81. The *p*-value is 0.047.

Table 8.44: Significance of Control Variables on the Statements: *Qatar university education helps students to develop critical thinking in whatever subject they study*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar university education helps students to develop critical thinking in whatever subject they study	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.59 84.25 71.52 43.00 125.50 56.83 48.33	KW Test	.047*
	Nationality	Qatari Other	78.98 65.87	MWU Test	.051**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	91.33 73.55 66.81 91.70 36.50	KW Test	.047*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.45 assesses the significance of control variables on the statement which suggests that 'Qatar's university education helps students to develop creative thinking in any subject', for which faculty, ethnicity, and class control variables found to be significant at various levels of significance. The faculty control variable, being significant at 5%, resulted in the highest mean rank going to Pharmacy with a value of 125.50; Business and Economics followed this value with a figure of 81.64. The lowest mean ranks were awarded to for Law and *Shari'ah* with values of 12.10 and 34.83. The *p*-value is 0.002.

As can be seen in Table 8.45, the ethnicity control variable, with a significance level of 10%, resulted in the highest mean rank being achieved by the Arab-Qatari ethnic group with a value of 79.38; this value is followed by that of 73.73 for the Other ethnic group. The lowest mean rank was for the Arab-non-Qatari ethnic group with a value of 63.95. The *p*-value is 0.089. In the class control variable, with a significance level of 5%, the highest mean ranks were for the lower middle class and upper class with values of 107.10 and 96.54. The lowest mean ranks were for the working class and upper middle class with values of 32.80 and 66.01. The *p*-value is 0.005.

Table 8.45: Significance of Control Variables on the Statements: *Qatar university education helps students to develop creative thinking in whatever the subject they study*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar university education helps students to develop creative thinking in whatever the subject they study	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	72.56 81.64 72.05 12.10 125.50 34.83 55.25	KW Test	.002*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.38 63.95 73.73	KW Test	.089**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	96.54 66.01 68.76 107.10 32.80	KW Test	.005*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.46 explores the significance of control variables on the statement which that 'Qatar's university education is away from producing a student who can compete in the global economy', for which the following control variables are found to be significant at various significance level: faculty and degree. The faculty control variable, being significant at 5% level, resulted in the highest mean rank going to Art and Science with a value of 83.81; it was followed by Business and Economics with a value of 75.55. The lowest value is recorded for Pharmacy at 11.50; *Shari'ah* also appeared at the low figure of 40.50. The *p*-value is 0.029. The degree control variable, being significant at 5% level of significance, resulted in the highest mean rank (123.00) going to those survey participants holding a Master's degree; the lowest value (64.63) was for those in possession of a doctorate. The *p*-value is 0.013.

Table 8.46: Significance of Control Variables on the Statements: *Qatar university education is away from producing student who can compete in the global economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar university education is away from producing student who can compete in the global economy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	83.81 75.55 68.75 46.80 11.50 40.50 51.17	KW Test	.029*
	Degree	Undergraduate Master Doctorate	69.77 123.00 64.63	KW Test	.013*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.47 examines the significance of control variables on the statement that 'Qatar's universities produce graduates with language skills'. There is only one control variable, namely degree, found to be significant at 10% with *p*-value of 0.098. The highest mean rank was scored by Masters Students with a value of 92.00; this was followed by the rating for undergraduates with a value of 71.25. The lowest value is for doctoral students with a value of 36.38. The *p*-value is 0.098.

Table 8.47: Significance of Control Variables on the Statements: *Qatar universities produce graduates with language skills*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatar universities produce graduates with language skills	Degree	Undergraduate Master Doctorate	71.25 92.00 36.38	KW Test	.098**

Note :(**) Statistically significant at 10%

Table 8.48 analyses the significance of control variables on the statement that 'Educational development in Qatar can respond to the demands of a KBE', for which age, faculty, degree, nationality, and ethnicity as control variables found to be significant at different critical levels. The age control variable, with a significance level of 5%, resulted in the highest mean rank going to 22-25 year-olds with a value of 82.08, which was then followed by the category for 26-30 year-olds with a value of 64.00. The lowest value is for 18-21 year-olds with a value of 65.14. The *p*-value is 0.049. The faculty control variable, with a significance level of 5%, resulted in the highest mean rank being secured by Pharmacy with a value of 96.00; this was followed by Business and Economics with a value of 84.14. The lowest mean rank (35.00) was assigned to the Other category and followed by that for *Shari'ah* with a value of 46.50. The *p*-value is 0.043.

The nationality control variable, being significant at 5% with *p*-value of 0.010, resulted in the highest mean rank going to Qatari nationals with a value of 80.01; other nationalities achieved a value of 63.16. The. For the ethnicity control variable (with a significance level of 5%), the highest rank went to the Arab-Qatari ethnic group with a value of 79.78, which was followed by the group designated for those of non-Arab (or Other) ethnicity with a value of 66.03. The lowest mean rank was recorded for the Arab-non-Qatari ethnic group with a value of 62.97. The *p*-value is 0.045.

Table 8.48: Significance of Control Variables on the Statements: *Educational development in Qatar can respond to the demand of the knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The educational qualifications of Qatari students are adequate for the needs of the private sector	Age	18-21 22-25 26-30	65.14 82.08 64.00	KW Test	.049*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	73.97 84.14 64.09 72.80 96.00 46.50 35.00	KW Test	.043*
	Degree	Undergraduate Master Doctorate	70.37 97.00 41.63	KW Test	.099**
	Nationality	Qatari Other	80.01 63.16	MWU Test	.010*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.78 62.97 66.03	KW Test	.045*

Note: (*) Statistically significant at 5% level

Table 8.49 looks at the significance of the control variables on the statement that 'The educational qualifications of Qatari students are adequate for the needs of the private sector'. The control variables found to be significant with different significance levels are gender, age, faculty, degree, and nationality.

As can be seen in Table 8.49, firstly, the gender control variable, with a significance level of 5% and with *p*-value of 0.010, resulted in the highest mean rank going to the group representing female gender with a value of 82.91; it was subsequently followed by the group for male gender with a value of 65.10. Secondly, the age control variable, with a significance level of 5%, resulted in the highest mean rank going to 22-25 year-olds with a value of 83.79 and this was followed by the category for 18-21 year-olds with a value of 68.65. The lowest mean rank went to 26-30 year-olds with a value of 41.00. The *p*-value is 0.004. Thirdly, the faculty control variable, with a significance level of 5%, resulted in the highest mean rank going to Law with a value of 123.00; it was followed by Pharmacy with a value of 112.00. The lowest ranks

were assigned to the categories for Other and Engineering, with values of 39.33 and 65.77. The *p*-value is 0.009.

Table 8.49: Significance of Control Variables on the Statements: *The educational qualifications of Qatari students are adequate for the needs of the private sector*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The educational qualifications of Qatari students are adequate for the needs of the private sector	Gender	Male Female	65.10 82.91	MWU Test	.010*
	Age	18-21 22-25 26-30	68.65 83.79 41.00	KW Test	.004*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	70.09 78.84 65.77 123.00 112.00 68.00 39.33	KW Test	.009*
	Degree	Undergraduate Master Doctorate	73.96 29.60 42.00	KW Test	.015*
	Nationality	Qatari Other	83.50 62.46	MWU Test	.002*

Note: (*) Statistically significant at 5% level

As can be seen from Table 8.49, the degree control variable, with a significance level of 5% and *p*-value of 0.015, resulted in the highest mean rank (73.96) going to the group for those participants with an undergraduate degree; it was followed by the doctoral qualification category with a value of 42.00. The lowest value is for those holding a Master's degree with a value of 29.60. Lastly, for the nationality control variable, the highest mean rank was taken by those of Qatari nationality with a value of 83.50; the category for other nationalities followed this ranking with a value of 62.46. The *p*-value is 0.002.

Table 8.50 examines the significance of control variables for the statement which suggests that 'If the qualifications of Qatari students are adequate, then the private sector will be willing to employ them'. For this, only gender, age and faculty control variables were found to be significant at 5% level of significance.

As can be seen from Table 8.50, the gender control variable resulted in the highest mean rank being achieved by the group representing female gender with a value of

85.38; it was followed by the group for male gender with a value of 63.72. The *p*-value is 0.002. In addition, the age control variable, with a significance level of 5%, resulted in the highest mean rank being secured by 22-25 year-olds with a value of 89.14. The lowest value is for 26-30 year-olds with a value of 58.25. The *p*-value is 0.001. Furthermore, for the faculty control variable, the highest mean rank was scored by Law with a value of 113.50; this was followed by Pharmacy with a value of 99.50. The lowest mean ranks were for the Other and Shari'ah categories with values of 27.00 and 66.50. The *p*-value is 0.021.

Table 8.50: Significance of Control Variables on the Statements: *If the qualifications of the Qatari students are adequate, the private sector will be willing to employ them*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
If the qualifications of the Qatari students are adequate, the private sector will be willing to employ them	Gender	Male Female	63.72 85.38	MWU Test	.002*
	Age	18-21 22-25 26-30	63.90 89.14 58.25	KW Test	.001*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	72.44 74.47 69.40 113.50 99.50 66.50 27.00	KW Test	.021*

Note: (*) Statistically significant at 5% level

Table 8.51 looks at the significance of control variables on the statement that 'Qatari students have the experience required for working in the private sector'. Age, faculty, degree, and class are the control variables found to be significant at 5% level of significance. In addition, the age control variable, with a significance level of 5%, resulted in the group for 22-25 year-olds securing the highest rank with a value of 78.73; the lowest mean rank was scored by the category for 26-30 year-olds with a value of 37.30. The *p*-value is 0.010. The faculty control variable, with a significance level of 5%, resulted in the highest mean rank for Law with a value of 112.80; this was then somewhat echoed by Pharmacy with a value of 106.50. The lowest mean ranks were found in the categories for Other and *Shari'ah* with values of 31.83 and 60.83. The *p*-value is 0.010.

Table 8.51: Significance of Control Variables on the Statements: *Qatari students have the experience required by the private sector*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari students have the experience required by the private sector	Age	18-21 22-25 26-30	71.69 78.73 37.30	KW Test	.010*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	62.17 76.08 75.34 112.80 106.50 60.83 31.83	KW Test	.010*
	Degree	Undergraduate Master Doctorate	74.46 16.20 42.25	KW Test	.001*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	92.67 75.15 68.44 45.40 41.40	KW Test	.045*

Note: (*) Statistically significant at 5% level

The degree control variable with *p*-value being 0.001, resulted in the highest mean rank being awarded to those participants at undergraduate level with a value of 74.46; the lowest value is correspondingly seen in the category for those holding a Master's degree at 16.20. The. For the class control variable with a significance level of 5%, the highest mean rank (92.67) went to the upper class grouping and it was followed by that of the upper middle class grouping with a value of 75.15. The lowest value is recorded for the working class subgroup with a value of 41.40. The *p*-value is 0.045.

Table 8.52 examines the significance of control variables on the statement which suggests that 'If Qatari students have adequate business experience then the private sector will be willing to employ them'. The control variables found to be significant include the following: age and faculty. Firstly, in the age control variable, with a significance level of 5%, the highest mean rank was awarded to 22-25 year-olds with a value of 83.18 and the lowest mean rank went to 26-30 year-olds with a value of 77.60. The *p*-value is 0.029.

Secondly, in the faculty control variable, with a significance level of 5%, the highest mean rank was secured by Pharmacy with a value of 99.00 and followed by that of

Law with a value of 87.90. The lowest value (at 32.33) was recorded for the Other subgroup in this control variable and followed by the value of 67.52 for Engineering. The *p*-value is 0.048. The results, hence, pointed to conflicting opinions among the participants of the questionnaire survey with regard to this issue.

Table 8.52: Significance of Control Variables on the Statements: *If the experience of the Qatari students is adequate for businesses, the private sector will be willing to employ them*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
If the experience of the Qatari students is adequate for businesses, the private sector will be willing to employ them	Age	18-21 22-25 26-30	64.76 83.18 77.60	KW Test	.029*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	68.44 84.17 67.52 87.90 99.00 81.83 32.33	KW Test	.048*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.53 depicts the findings for the significance of control variables on the statement that 'Qatari students with an adequate education can demonstrate high performances in the workplace', for which only nationality and class as control variables found to be significant. The nationality control variable, being significant at 10% with *p*-value of 0.071, resulted in the highest mean rank (78.19) being awarded to those of Qatari nationality and this was followed by the category representing other nationalities with a value of 66.46. In addition, the class control variable, with a significance level of 5%, resulted in the highest mean rank for the upper class category with a value of 79.83 and it was followed by the upper middle class category with a value of 77.88. The lowest mean rank was for the working class category with a value of 21.70. The *p*-value is 0.030.

Table 8.53: Significance of Control Variables on the Statements: *Qatari students with adequate education can have high performance in the workplace*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari students with adequate education can have high performance in the workplace	Nationality	Qatari Other	78.19 66.46	MWU Test	.071**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	79.38 77.88 69.28 63.10 21.70	KW Test	.030*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.54 explores the significance of control variables on the assertion that 'Qatari students are ready to accept any job'. The sole control variable found to be significant is age, with a significance level of 5% and *p*-value of 0.007. The highest mean rank was achieved by 18-21 year-olds with a value of 78.68 and it was followed by 22-25 year-olds with a value of 64.36. The lowest mean rank was for 26-30 year-olds with a value of 41.20.

Table 8.54: Significance of Control Variables on the Statements: *Qatari students ready to accept any job*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari students ready to accept any job	Age	18-21 22-25 26-30	78.68 64.36 41.20	KW Test	.007*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.55 presents the results related to the significance of control variables on the suggestion that 'Qatari students are concerned with their social prestige when choosing a job'. For this, only two control variables found to be significant at 5% level: faculty and class. As for the faculty control variable, with a significance level of 5%, the highest mean rank (123.50) was for Pharmacy; it was followed by Law and Business and Economics, with values of 106.90 and 85.78. The lowest mean ranks were for *Shari'ah* and the category allocated to Other in this control variable, with values of 30.17 and 58.67. The *p*-value is 0.007.

Table 8.55: Significance of Control Variables on the Statements: *Qatari students concerned with their social prestige in choosing a job*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari students concerned with their social prestige in choosing a job	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.76 85.78 65.10 106.90 123.50 30.17 58.67	KW Test	.007*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	91.75 84.55 65.64 42.90 21.90	KW Test	.000*

Note: (*) Statistically significant at 5% level

For the class control variable, with *p*-value being 0.000, the highest mean rank was for the upper class category with a value of 91.75 and it was followed by the upper middle class category with a value of 84.55. The lowest mean ranks were registered for the working class and lower middle class categories, with values of 21.90 and 42.90.

8.7. DETERMINING FACTORS OF THE PERCEPTIONS ON THE READINESS OF QATAR'S POPULATION FOR A KBE

After assessing the adequacy of the Qatari education system for KBE, this section focuses on the readiness of Qataris for KBE by assessing their chosen answers for the questions in the survey in relation to their particular demographic variables.

Table 8.56: Significance of Control Variables on the Statements: *Qatari individuals have the skills required to satisfy the needs of the private sector*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals have the skills required to satisfy the needs of the private sector	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	75.76 81.31 66.03 115.30 19.50 22.17 47.17	KW Test	.002*
	Nationality	Qatari Other	83.89 62.17	MWU Test	.001*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	84.97 64.10 50.70	KW Test	.001*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	78.88 68.88 72.17 80.40 25.50	KW Test	.092**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.56 depicts the analysis in relation to the significance of control variables on the statement that 'Qatari individuals have the skills required to meet the demands of the private sector', for which faculty, nationality, ethnicity, and class found to be significant at 5% except for class control variable which is significant at 10%. In the faculty control variable, with a significance level of 5%, the highest mean ranks were achieved by Law, with a value of 115.30, and Business and Economics with a figure of 81.31. The lowest mean ranks were secured by Pharmacy and *Shari'ah*, with values

of 19.50 and 22.17. The *p*-value is 0.002. For the nationality control variable, with a significance level of 5%, the highest mean rank was for Qatari nationals with a value of 83.89; other nationalities scored the mean rank of 62.17. The *p*-value is 0.001.

Table 8.57 presents the results in relation to the significance of control variables on the statement that 'The productivity of Qatari individuals is adequate for the private sector', for which age, faculty, nationality, ethnicity, and class as control variables found to be significant at 5% level except for class which is significant at 10%. In the age control variable, the highest mean rank was for 22-25 year-olds with a value of 83.09; the lowest mean rank was for 26-30 year-olds with a value of 62.55. The *p*-value is 0.045. Secondly, for the faculty control variable, with a significance level of 5%, the highest mean rank (103.50) was recorded for Law and it was followed by the rating for Business and Economics with a value of 86.75. The lowest mean ranks were secured by Pharmacy and *Shari'ah*, with values of 10.50 and 33.50. The *p*-value is 0.001.

Table 8.57: Significance of Control Variables on the Statements: *The productivity of the Qatari individuals is adequate for the private sector*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The productivity of the Qatari individuals is adequate for the private sector	Age	18-21 22-25 26-30	66.53 83.09 62.55	KW Test	.045*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	78.05 86.75 61.82 103.50 10.50 33.50 49.00	KW Test	.001*
	Nationality	Qatari Other	80.02 65.08	MWU Test	.020*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	82.31 64.06 61.50	KW Test	.015*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	63.75 68.54 76.02 44.50 37.70	KW Test	.076**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Furthermore, the results for the nationality control variable show that the highest mean rank for Qatari nationals with a value of 80.02, followed by the rank for other

nationalities at 65.08. The *p*-value is 0.020. In the ethnicity control variable, with a significance level of 5%, the highest mean rank was taken by the Arab-Qatari ethnic group with a value of 82.31 and the lowest mean rank was scored by the non-Arab (or Other) ethnic group with a value of 61.50. The *p*-value is 0.015.

Table 8.58 presents the results for the impact of control variables on the statement which suggests that 'Qatari individuals with adequate experience can perform highly in the workplace', for which age, degree, nationality, and ethnicity, as control variables, found to be significant at 5%. In the age control variable, with *p*-value being 0.031, the highest mean rank was scored by 22-25 year-olds with a value of 83.34; correspondingly, the lowest mean rank was scored by 18-21 year-olds with a value of 65.16. As for the degree control variable, with p=0.040, the highest mean rank was achieved by undergraduate students with a value of 74.46 and it was followed by doctoral students with a value of 42.25. The lowest value is, however, for Master's students with a value of 16.20.

As can be seen in Table 8.58, the nationality control variable resulted in the highest mean rank for Qatari nationals with a value of 79.25; other nationalities achieved a rank of 65.66. The *p*-value is 0.033. Moreover, for the ethnicity control variable, with p=0.032, the highest mean rank was for the Arab-Qatari ethnic group with a value of 81.15; the lowest mean rank was for those participants of non-Arab ethnicity with a value of 63.03.

Table 8.58: Significance of Control Variables on the Statements: *Qatari individuals with adequate experience can have high performance in the workplace*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals with adequate experience can have high performance in the workplace	Age	18-21 22-25 26-30	65.16 83.34 73.35	KW Test	.031*
	Degree	Undergraduate Master Doctorate	74.46 16.20 42.25	KW Test	.040*
	Nationality	Qatari Other	79.25 65.66	MWU Test	.033*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	81.15 64.75 63.03	KW Test	.032*

Note: (*) Statistically significant at 5% level

Table 8.59 examines the significance of control variables on the proposition that 'Qatari individuals with adequate skills perform well in the workplace'. The control variables found to be significant at different levels of significance are gender, faculty, degree, and ethnicity. In the faculty control variable, being significant at 5% with p=0.002, the highest mean value is for law with a value of 112.40 and was followed by business and economics with a value of 85.66. The lowest values were for Pharmacy and *Shari'ah*, with values of 9.00 and 46.33.

Table 8.59: Significance of Control Variables on the Statements: *Qatari individuals with adequate skills perform well in the workplace*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals with adequate skills perform well in the workplace	Gender	Male Female	67.27 79.05	MWU Test	.068**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	62.32 85.66 71.35 112.40 9.00 46.33 56.33	KW Test	.002*
	Degree	Undergraduate Master Doctorate	73.18 67.70 20.25	KW Test	.018*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.48 64.29 71.77	KW Test	.068**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As for the degree control variable, with a significance level of 5%, it resulted in the highest mean rank going to undergraduate students with a value of 73.18 and the lowest mean rank was scored by doctoral students with a value of 20.25. The p-value is 0.018. Moreover, for the ethnicity control variable, being significant at 0.068 at 10% level of significance, the highest mean rank was for the Arab-Qatari ethnic group at 79.48 and the lowest rank was evidenced by the Arab-non-Qatari ethnic group at 64.29.

Table 8.60 presents the assessment of the significance of control variables on the statement that 'Qatari individuals are more productive than non-Qatari individuals', for which age, faculty, and degree as control variables were found to be significant. As regards to the age control variable, being significant at 5% with p=0.001, the

highest mean rank was for 18-21 year-olds with a value of 77.55 and it was followed by the ranking for 22-25 year-olds with a value of 68.70. The lowest mean rank was for 26-30 year-olds with a value of 31.50.

Table 8.60: Significance of Control Variables on the Statements: *Qatari individuals are more productive than non-Qatari individuals*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals are more productive than non-Qatari individuals	Age	18-21 22-25 26-30	77.55 68.70 31.50	KW Test	.001*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	70.12 73.94 72.88 101.50 10.50 86.83 42.50	KW Test	.058**
	Degree	Undergraduate Master Doctorate	72.64 32.30 82.75	KW Test	.060**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As can be seen from Table 8.60, for the faculty control variable, with a significance level of 10% and p=0.058, the highest mean rank (101.50) was scored to Law faculty members and it was followed by the ranking for *Shari'a*h with a value of 86.83. The lowest values in this control variable were for Pharmacy and the Other category, at figures of 10.50 and 42.50. Furthermore, for the degree control variable, with a significance level of 10%, the highest mean rank was scored by doctoral students with a mean value of 82.75; this rating was followed by that of the undergraduate subgroup with a value of 72.64. The lowest mean rank was for those participants possessing a Master's degree with a value of 32.30. The p-value is 0.060.

Table 8.61 displays the analyses on the significance of control variables on the suggestion that 'Qatari individuals prefer to be employed in the private sector because it offers stable and secure work'. Among the control variables, gender, age and nationality, were found to be significant. For the gender control variable, with a significance level of 10% and p=0.054, the highest mean rank was for female gender with a value of 79.62; male gender had a somewhat lesser value of 66.26. For the age control variable, being significant at 5% with p=0.007, the highest mean rank was for

22-25 year-olds with a value of 80.05 and this was followed by the value of 70.37 for 18-21 year-olds. The lowest mean rank was recorded for 26-30 year-olds with a value of 36.70.

Table 8.61: Significance of Control Variables on the Statements: *Qatari individuals prefer private sector for offering stable and secure work*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals prefer private sector for offering stable and secure work	Gender	Male Female	66.26 79.62	MWU Test	.054**
	Age	18-21 22-25 26-30	70.37 80.05 36.70	KW Test	.007*
	Nationality	Qatari Other	62.34 77.41	MWU Test	.025*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

For the nationality control variable, with a significance level of 5% and p=0.025, the highest mean rank was achieved by the group for other nationalities with a value of 77.41, whereas the group for those of Qatari nationality ranked at 62.34.

Table 8.62 presents the significance of control variables on the statement that 'Qatari individuals prefer to work in the public sector, as they do not want to work hard', for which only the faculty of the participants found to be statistically significant with *p*-value of 0.003 at the 5% level of significance. The highest mean rank was for Pharmacy with a value of 128.50; which is followed by Law with a value of 122.60. The lowest mean values were for *Shari'ah* and the Other group category, with values of 43.33 and 56.70.

Table 8.62: Significance of Control Variables on the Statements: *Qatari individuals prefer to work in the public sector as they do not want to work hard*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals prefer to work in the public sector as they do not want to work hard	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	70.39 56.95 70.61 122.60 128.50 43.33 56.70	KW Test	.003*

Note: (*) Statistically significant at 5% level

Table 8.63 presents the results from the examination of the significance of control variables on the statement that 'Qatar's citizens are prepared to work in any location'.

It should be noted that among others, age and class found to be significant. For the control variable of class, with a significance level of 5%, the highest mean rank was secured by the category representing the upper class participants with a value of 106.54; this was followed by the working class category with a value of 92.10. The lowest mean rank was for the upper middle class category with a value of 57.97. The *p*-value is 0.004.

Table 8.63: Significance of Control Variables on the Statements: *Qatari individuals are ready to work in any location*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals are ready to work in any location	Age	18-21 22-25 26-30	73.40 73.62 45.40	KW Test	.099**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	106.54 57.97 69.69 68.20 92.10	KW Test	.004*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

The KW-Test results for the statement 'Qatari people are not willing to change their jobs' are presented in Table 8.64, which shows that only 'faculty' as a variable is significant at 5% with *p*-value of 0.015. The highest mean rank was for Art and Science with a value of 79.31 and it was followed by Engineering with a value of 77.55. The lowest mean ranks were recorded for Pharmacy and *Shari'ah*, with values of 3.00 and 30.67.

Table 8.64: Significance of Control Variables on the Statements: *Qatari individuals are not keen to change their jobs*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari individuals are not keen to change their jobs	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	79.31 65.06 77.55 69.20 3.00 30.67 44.75	KW Test	.015*

Note: (*) Statistically significant at 5% level

8.8. DETERMINING FACTORS OF THE PERCEPTIONS ON QATARISATION AND ITS IMPACT ON KBE

This section takes the discussion to the macro level by further analysing the perceptions and the opinions of the participants on the impact of Qatarisation on developing Qatar into a knowledge economy, as Qatarisation, as a policy aims to replace the expatriate workers with Qatari nationals which has education, training and skills implications for Qataris.

Table 8.65 presents the results for the significance of control variables on the statement that 'Government legislation exists to establish an efficient Qatarization strategy'. As the results depicts, faculty, nationality, ethnicity, and class found to be the significant control variables with various levels of significance. For the faculty control variable, with a significance level of 5% and p=0.001, the highest mean rank (94.05) was achieved by Business and Economics and it was followed by Art and Science with a value of 70.08. The lowest mean values were for Pharmacy and the Other category, at 21.00 and 32.00. The p-value is 0.001. Under the control variable of nationality, with a significance level of 10% and p=0.055, the highest mean rank was recorded for the category representing Qatari nationals with a value of 78.83 and it was followed by the category assigned to other nationalities with a value of 65.98.

Table 8.65: Significance of Control Variables on the Statements: *Government legislation exists to establish an efficient Qatarisation strategy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Government legislation exists to establish an efficient Qatarisation strategy	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	70.08 94.05 68.93 41.40 21.00 59.50 32.00	KW Test	.001*
	Nationality	Qatari Other	78.83 65.98	MWU Test	.055**
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.79 64.57 69.27	KW Test	.092**
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	87.33 63.08 74.95 48.20 35.20	KW Test	.034*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

For the ethnicity control variable, with a significance level of 10%, the highest mean rank went to the Arab-Qatari ethnic group with a rank of 79.79; the lowest mean rank was secured by the ethnic group for Arab-non-Qatari with a mean rank of 64.57. The *p*-value is 0.092. As for the class control variable with a significance level of 5% and *p*-value of 0.034, the highest value is for the upper class category at 87.33 and this was followed by the middle class category with a value of 74.95. The lowest values were for the working class and lower middle class, at 35.20 and 48.20.

With regards to statement that 'This legalisation is sufficient to achieve Qatarization', Table 8.66 depicts that 'class', as control variables is significant at 5% level of significance with *p*-values of 0.008 respectively.

Table 8.66: Significance of Control Variables on the Statements: *This legislation is sufficient to achieve Qatarisation*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	98.38 63.78 71.80 75.80 27.00	KW Test	.008*

Note: (*) Statistically significant at 5% level

For the control variable of class, the highest mean rank was achieved by the upper class category with a value of 98.38 and it was followed by the lower middle class category with a value of 75.80. The lowest value is for the working class category with a value of 27.00.

Table 8.67: Significance of Control Variables on the Statements: *The private sector is aware of its social responsibility in encouraging Qatarisation*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The private sector is aware of its social responsibility in encouraging Qatarisation	Age	18-21 22-25 26-30	65.59 82.04 75.45	KW Test	.068**

Note: (**) Statistically significant at 10%

Table 8.67 presents the significance of control variables for the statement that 'The private sector is aware of its social responsibility in encouraging Qatarization', for which age was found to be the only significant variable at 10% with *p*-value of 0.068.

The highest mean rank was recorded for 22-25 year-olds with a value of 82.04; the lowest value is for 18-21 year-olds with a value of 65.59.

Table 8.68 explores the significance of control variables for the proposition that 'The private sector places little emphasis on social responsibility with regard to Qatarization'.

Table 8.68: Significance of Control Variables on the Statements: *The private sector places little emphasis on social responsibility regarding Qatarisation*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
The private sector places little emphasis on social responsibility with regard to Qatarization	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	107.17 63.38 67.95 68.00 79.00	KW Test	.010

Note: (*) Statistically significant at 5% level;

As can be seen in Table 8.68, 'class' is the only control variable found to be significant at 5% level with p=0.010. The highest mean rank was registered by the upper class group with a value of 107.17, which is followed by the working class group with a value of 79.00. The lowest mean rank was secured by the upper middle class group with a value of 63.38.

Table 8.69: Significance of Control Variables on the Statements: *Qatari workforce does not have the adequate skills to replace the expatriates*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari workforce does not have the adequate skills to replace the expatriates	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	77.18 72.03 72.67 16.60 104.00 60.00 61.67	KW Test	.054**
	Nationality	Qatari Other	61.25 79.22	MWU Test	.008*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.69 examines the significance of control variables on the statement that 'The Qatari workforce does not have the necessary skills with which to replace the international workers in Qatar', for which faculty and nationality were found to be the only control variables. For the control variable of faculty, with a significance level of 10% and the p-value of 0.054, the highest mean rank was for Pharmacy with a value

of 104.00, followed by Art and Science with a value of 77.18. The lowest mean ranks were for Law and *Shari'ah*, with values of 16.60 and 60.00.

With regard to 'nationality' control variable, with a significance level of 5% and p= 0.008, the highest mean rank was for other nationalities with a value of 79.22; Qatari nationals correspondingly scored a value of 61.25. The.

The significance of control variables on the statement that 'The Qatari workforce does not have the necessary experience to replace its international workers' is explored and presented in Table 8.70. As can be seen, gender, faculty, nationality, and ethnicity as control variables were found to be statistically significant. With regard to the control variable of gender, being significant at 5% with p=0.042, the highest mean score was for the group representing male gender at a value of 76.51 and the value for the group assigned to female gender was 62.56. In the second control variable of faculty, with a significance level of 5%, the highest mean rank (107.00) was for Pharmacy, followed by Art and Science at a value of 80.56. The lowest values were for Law and Shari'ah at 20.50 and 61.50. The p-value is 0.032.

Table 8.70: Significance of Control Variables on the Statements: *Qatari workforce does not have the adequate experience to replace the expatriates*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatari workforce does not have the adequate experience to replace the expatriates	Gender	Male Female	76.51 62.56	MWU Test	.042*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	80.56 63.86 72.93 20.50 107.00 61.50 75.92	KW Test	.032*
	Nationality	Qatari Other	56.80 82.57	MWU Test	.000*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	57.63 81.82 80.87	KW Test	.001*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As Table 8.70 depicts, in the third control variable of nationality, with a significance level of 5%, the highest mean rank was scored by participants of other nationalities (aside from Qatari) with a value of 82.57; Qatari nationals, however, achieved a value of 56.80. The p-value is 0.000. For the final control variable of ethnicity, with a significance level of 5%, the highest mean rank was for the Arab-non-Qatari ethnic

group with a value of 81.82; this ranking was followed by that of the non-Arab (or Other) ethnic group with a value of 80.87. The lowest mean rank was recorded for the Arab-Qatari ethnic group with a value of 57.63. The *p*-value is 0.001.

Table 8.71 presents the results of the examination of the significance of control variables on the assertion that 'Qatarization will be harmful for the Qatari economy'. Among the control variables, gender, faculty, nationality, and ethnicity was found to be significant with 5% level of significance.

Table 8.71: Significance of Control Variables on the Statements: *Qatarisation will be harmful for the Qatari economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatarisation will be harmful for the Qatari economy	Gender	Male Female	77.23 60.00	MWU Test	.013*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	78.58 52.70 79.11 95.50 31.00 31.00 55.30	KW Test	.005*
	Nationality	Qatari Other	63.35 76.67	MWU Test	.047*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.84 79.65 64.47	KW Test	.046*

Note: (*) Statistically significant at 5% level

As the findings in Table 8.71 show, in the first control variable of gender, with *p*-value of 0.013, the group for male gender achieved the highest mean rank with a value of 77.23; in comparison, the value for the group representing female gender was 60.00. In the second control variable of faculty, with *p*=0.005, the highest mean rank was for Law with a value of 95.50, followed by Engineering with a value of 79.11. The lowest mean ranks were given to Pharmacy and *Shari'ah*, with both subgroups holding a value of 31.00.

In the third control variable of nationality, the highest mean was scored with the group for other nationalities with a value of 76.67; which is followed by the group representing Qatari nationals with a value of 63.35. The *p*-value is 0.047. For the final control variable of ethnicity, the highest mean rank was for the Arab-non-Qatari ethnic group with a value of 79.65 and the lowest mean rank was for the group

representing those participants of non-Arab (or Other) ethnicity with a value of 64.47. The *p*-value is 0.046.

This section analyses the significance of control variables on the statement that 'Qatarization will provide motivation for Qatar's citizens to develop themselves is the same across categories of faculty', and the results are presented in Table 8.72.

As can be seen from Table 8.72, the following control variables were found to be statistically significant: faculty, ethnicity, and class. In the first control variable of faculty, with a significance level of 5%, the highest mean scores were for Law and Business and Economics, with values of 97.00 and 86.41. The lowest mean rank was for Pharmacy with a value of 4.00. The *p*-value is 0.000.

As can be seen in Table 8.72, in the second control variable, namely ethnicity, with a significance level of 10% and *p*-value of 0.076, the highest mean rank was for those participants under the label of Other with a value of 78.70; the lowest value is recorded for the Arab-non-Qatari ethnic group with a value of 63.60. For the final control variable of class, with the *p*-value of 0.010 and significance level of 5%, the highest mean rank was for the upper class category with a value of 105.79, followed by the upper middle class category with a value of 73.08. The lowest mean rank was for the working class category with a value of 47.20.

Table 8.72: Significance of Control Variables on the Statements: *Qatarisation will provide motivation for the Qatari individuals to develop themselves*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatarisation will provide motivation for the Qatari individuals to develop themselves	Faculty	Art and Science	56.99	KW Test	.000*
		Business & Economics	86.41		
		Engineering	78.37		
		Law	97.00		
		Pharmacy	4.00		
		Shari'ah	45.67		
		Other	37.50		
	Ethnicity	Arab-Qatari	78.53	KW Test	.076**
		Arab-Non-Qatari	63.60		
		Others	78.70		
	Class	Upper class	105.79	KW Test	.010*
		Upper middle-class	73.08		
		Middle-class	65.66		
		Lower middle-class	68.40		
		Working class	47.20		

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.73 investigates the significance of control variables on the assertion that 'Qatarisation will help Qatar to develop the necessary skills and knowledge in order to become a KBE', for which gender, faculty and ethnicity as control variables were found to be significant. In the first control variable of gender, with a significance level of 10% and *p*-value of 0.058, the group for female gender had a mean rank value of 78.32, whereas the group for male gender held a value of 65.33. In the second control variable of faculty, with a significance level of 5%, the highest mean rank was for Business and Economics with a value of 85.95 and it was followed by Art and Science with a value of 72.38. The lowest mean ranks were for Pharmacy and the Other subgroup, with values of 4.00 and 45.83. The *p*-value is 0.021.

Table 8.73: Significance of Control Variables on the Statements: *Qatarisation will help Qatar to develop the necessary skills and knowledge for the economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Qatarisation will help Qatar to develop the necessary skills and knowledge for the economy	Gender	Male Female	65.33 78.32	MWU Test	.058**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	72.38 85.95 65.86 62.90 4.00 53.33 45.83	KW Test	.021*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	78.17 62.07 73.81	KW Test	.063**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

For the final control variable of ethnicity, with a significance level of 5% with *p*=0.063, the highest mean value was scored by the Arab-Qatari ethnic group with a value of 78.17; the lowest value is correspondingly scored by the Arab-non-Qatari ethnic group with a value of 62.07.

8.9. DETERMINING FACTORS OF THE PERCEPTIONS ON PERSONAL KNOWLEDGE DEVELOPMENT AND KBE

This section brings the analysis and the discussion to the individual respondents' level by probing them for their own personal knowledge development and the potential impact this they consider on KBE.

Table 8.74 presents the analyses of the significance of control variables on the question that 'Do you read any other book other than your school textbooks?. For this, only faculty is control variable found to be significant at 10% level of significance, respectively. In the control variable of faculty, with a significance level of 10% and *p*=0.060, the highest mean rank was scored by Law with a value of 91.50 and it was followed by Art and Science with a value of 76.94. The lowest values were recorded for Pharmacy and *Shari'ah*, with values of 20.50 and 44.17.

Table 8.74: Significance of Control Variables on the Statements: *Do you read any other book other hand your school textbooks?*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Do you read any other book other hand your school textbooks?	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	76.94 73.75 69.55 91.50 20.50 44.17 56.00	KW Test	.060**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

With regards to the question on 'What types of the book do you read? Scientific/ technological', the findings are presented in Table 8.75. For this, only two control variables were found to be statistical significant at 5% level of significance: ethnicity and nationality. For the ethnicity control variable, the highest mean rank was scored by the Arab-non-Qatari ethnic group with a value of 29.66 and the lowest mean rank was awarded to the Arab-Qatari ethnic group with a value of 16.89. The *p*-value is 0.008.

As for the control variable of nationality, the highest mean rank was scored by those participants assigned to the group for other nationalities with a value of 29.48; Qatari nationals correspondingly secured a value of 17.53. The *p*-value is 0.003

Table 8.75: Significance of Control Variables on the Statements: *Types of the book do you read? Scientific/Technology*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Types of the book do you read? Scientific/Technology	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	16.89 29.66 28.93	KW Test	.008*
	Nationality	Qatari Other	17.53 29.48	MWU Test	.003*

Note: (*) Statistically significant at 5% level

Table 8.76 presents the results for the significance of control variables on the question 'What types of the book do you read? Economy'. Gender is the sole control variable found to be significant with p=0.034 at 5% level of significance. The highest mean rank was scored by the female gender with a value of 20.00, whereas the group representing male gender scored a value of 12.75..

Table 8.76: Significance of Control Variables on the Statements: *Types of the book do you read? Economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Types of the book do you read? Economy	Gender	Male Female	12.75 20.00	MWU Test	.034*

Note: (*) Statistically significant at 5% level

Table 8.77 presents the results in relation to the significance of control variables on the question 'What types of the book do you read? History'. As can be seen, 'age' was found to be the only significant value with *p*=0.039 and 5% level of significance. The highest mean rank was for the 26-30 year-olds with a value of 37.38 and the lowest mean rank was for 18-21 year-olds with a value of 25.33.

Table 8.77: Significance of Control Variables on the Statements: *Types of the book do you read? History*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Types of the book do you read? History	Age	18-21 22-25 26-30	25.33 36.89 37.38	KW Test	.039*

Note: (*) Statistically significant at 5% level

Table 8.78 examines the significance of control variables on the question 'What types of the book do you read? Politics', for which age and gender found to be significant at 5% level of significance with *p*=0.040 and *p*=0.016 respectively. In the first control variable of age, the highest mean rank was for 22-25 year-olds with a value of 23.55 and the lowest mean rank was for 18-21 year-olds with a value of 12.91. For the gender, the highest mean rank was scored by the category assigned to female gender with a value of 25.25; in comparison, the group for male gender scored a value of 16.35.

Table 8.78: Significance of Control Variables on the Statements: *Types of the book do you read? Politics*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Types of the book do you read? Politics	Age	18-21 22-25 26-30	12.91 23.55 20.88	KW Test	.040*
	Gender	Male Female	16.35 25.25	MWU Test	.016*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.79 examines the significance of control variables on the statement 'What types of the book do you read? Fiction', for which age, nationality, and ethnicity were found to be the significant variables with 5% level of significance and *p*-values of 0.018, 0.007, and 0.021. For the variable age, the highest mean rank is for 18-21 year-olds with a value of 18.00 and the lowest mean rank is for 22-25 year-olds with a value of 8.44. In the second control variable of nationality, the highest mean rank is that of the group representing other nationalities with a value of 17.80; the group assigned to Qatari nationals holds a value of 8.78.

Table 8.79: Significance of Control Variables on the Statements: *Types of the book do you read? Fiction*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Types of the book do you read? Fiction	Age	18-21 22-25 26-30	18.00 8.44 17.00	KW Test	.018*
	Nationality	Qatari Other	8.78 17.80	MWU Test	.007*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	8.78 16.92 19.43	KW Test	.021*

Note: (*) Statistically significant at 5% level

For the final control variable of ethnicity, the highest mean rank was awarded to the subgroup representing non-Arab (or Other) ethnicity with a value of 19.43; the lowest mean rank in this particular context was registered by the Arab-Qatari ethnic subgroup with a value of 8.78.

Table 8.80 presents the results for the significance of control variables on the question as to 'Which of the following current affairs magazines do you read?'. The sole control variable found to be statistically significant is gender with 10% significance

level and *p*-value of 0.063. The highest mean rank was scored by the group for female gender with a value of 76.52, yet the group allocated to male gender scored a value of 64.54. The *p*-value is 0.063, thereby indicating a range of opinions from the various participants of the questionnaire on this topic.

Table 8.80: Significance of Control Variables on the Statements: *Which of the following current affairs magazines do you read?*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Which of the following current affairs magazines do you read	Gender	Male Female	64.54 76.52	MWU Test	0.063**

Note: (**) Statistically significant at 10%

8.10. DETERMINING FACTORS OF THE PERCEPTIONS ON SECTORAL CHOICE FOR JOBS AT INDIVIDUAL LEVEL

This section continues with exploring the determining demographic variables on the sectoral choices for jobs at individual level. In other words, it aims to examine the statistical significance of the differences, if any, expressed on the statements provided and questions asked in relation to the reasons of opting for a particular sector for jobs among the respondents. It should be noted that it is a well known attitude in the GCC region, even the majority of the young generation considers public sector job as the main sector.

Table 8.81: Significance of Control Variables on the Statements: *Which sector do you prefer more in seeking for a job?*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Which sector do you prefer more in seeking for a job?	Degree	Undergraduate Master Doctorate	65.25 106.50 106.50	KW Test	.002*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	66.29 69.73 62.34 104.50 91.40	KW Test	.048*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

Table 8.81 displays the results for the significance of control variables on the question as to 'Which sector would you prefer to work in?'. Among the control variables, only degree and class were found to be significant at 5% level of significance with *p*-values

of 0.002 and 0.048, respectively. Under the first control variable of degree, the highest mean rank was jointly awarded to the subgroups for Masters Students and doctoral candidates, both holding the value of 106.50. The lowest mean rank was for undergraduate students at a value of 65.25. As for the control variable of class, the highest mean rank was for the lower middle class category with a value of 104.50 and the lowest mean rank was for the middle class category with a value of 62.34.

Table 8.82 presents the results for the significance of control variables on the question as to 'Whether a particular sector provides a stable working environment.' The control variables of nationality, and ethnicity were found to be significant with 5% level of significance and *p*–values of 0.047, and 0.037.

Table 8.82: Significance of Control Variables on the Statements: *Whether particular sector provides a stable working environment*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
	Nationality	Qatari Other	77.93 64.77	MWU Test	.047*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	79.14 61.52 74.83	KW Test	.037*

Note: (*) Statistically significant at 5% level

For the marital status control variable, the highest mean rank was scored by those participants defined as divorced, with a value of 127.00, which is followed in ranking by the group for those of single marital status with a value of 71.93; the lowest mean rank (40.06) was for those participants with a married marital status. In the second control variable of nationality, the highest mean rank was scored by Qatari nationals with a value of 77.93; this was followed by the ranking for other nationalities with a value of 64.77. In the final control variable of ethnicity, the highest mean rank was taken by the Arab-Qatari ethnic group with a value of 79.14; in contrast, the lowest mean rank was for the Arab-non-Qatari ethnic group with a value of 61.52.

As for the question 'Whether a particular sector provides a stable income', the analysis show that the only statistically significant control variable is that of faculty with a significance level of 5% and *p*-value of 0.038. As can be seen in table 8.83, the highest mean rank was scored by Pharmacy with a value of 130.50, followed by Law

with a value of 105.90. The lowest mean rank was recorded for *Shari'ah* with a value of 19.67.

Table 8.83: Significance of Control Variables on the Statements: *Whether a particular sector provides stable income (salary)*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Whether particular sector provides stable income (salary)	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	66.21 73.69 72.89 105.90 130.50 19.67 57.17	KW Test	.038*

Table 8.84 depicts the results for the significance of control variables on the question as to 'Whether a particular sector does not require hard work and creativity'. For this, control variables of nationality, ethnicity, and class were found to be significant at 5% level. In the first control variable of nationality, the highest mean rank was scored by the Other subgroup with a value of 77.51; and the *p*-value is 0.023.

Table 8.84 Significance of Control Variables on the Statements: *Whether particular sector does not require hard work and creativity*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Whether particular sector does not require hard work and creativity	Nationality	Qatari Other	62.47 77.51	MWU Test	.023*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	63.73 71.45 98.13	KW Test	.009*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	92.00 76.72 63.26 48.00 100.00	KW Test	.016*

Note: (*) Statistically significant at 5% level

As Table 8.84 shows, in the second control variable of ethnicity, the highest mean rank was scored by those participants defined by the Other ethnic group with a value of 98.13; the lowest mean rank was correspondingly awarded to the Arab-Qatari ethnic group with a value of 63.73. The *p*-value is 0.009.

In the final control variable of class, the highest mean rank was scored by the working class category with a value of 100.00 and this was followed by the upper class

category with a value of 92.00. The lowest mean rank was for the lower middle class category with a value of 48.00. The *p*-value is 0.016.

Table 8.85 investigates the significance of control variables on the question as to 'Whether the chosen sector does not need to be competitive'. The control variables found to be significant are gender, nationality, and class with 5% level of significance and *p*-values of 0.016, 0.049 and 0.043 respectively. For the first control variable of gender, the highest mean rank was scored by the group for male gender with a value of 76.92; the group for female gender scored a value of 60.23. In the second control variable of nationality, the highest mean rank was scored by the group assigned to those participants of other nationalities with a value of 76.71. In the final control variable of class, the highest mean rank went to the working class category with a value of 110.70; which is followed by the upper class category with a value of 82.92. The lowest value is for the middle class category with a value of 63.43.

Table 8.85: Significance of Control Variables on the Statements: *Whether the chosen sector does not require to be competitive*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Whether the chosen sector does not require to be competitive	Gender	Male Female	76.92 60.23	MWU Test	.016*
	Nationality	Qatari Other	63.51 76.71	MWU Test	.049*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	82.92 75.43 63.43 65.60 110.70	KW Test	.043*

Note: (*) Statistically significant at 5% level

Table 8.86 looks at the significance of control variables on the statement 'Whether the chosen sector does not require innovation', for which gender, nationality, and class were found to be statistically significant. In the first control variable of gender, with a significance level of 10%, the group for male gender scored a mean rank of 75.63, whereas the group for female gender achieved a value of 62.58. The *p*-value is 0.062. Under the second control variable of nationality, with a significance level of 5%, the highest mean rank was taken by those participants of other nationalities, aside from Qatari, with a value of 77.35; those of Qatari nationality scored a value of 62.67. The *p*-value is 0.029. For the final control variable of class, with a significance level of

5%, the highest mean rank was for the working class category with a value of 110.50, followed by the upper class category with a value of 95.63. The lowest value is represented by the category for the lower middle class at 61.00. The *p*-value is 0.003.

Table 8.86: Significance of Control Variables on the Statements: *Whether the chosen sector does not require innovation*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Whether particular sector does not require innovation	Gender	Male Female	75.63 62.58	MWU Test	.062**
	Nationality	Qatari Other	62.67 77.35	MWU Test	.029*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	95.63 76.99 61.15 61.00 110.50	KW Test	.003*

Note: (*) Statistically significant at 5% level

Table 8.87 depicts the results for the significance of control variables on the question 'Which particular industry would you like to work for in the future'. The control variables found to be statistically significant are gender, faculty, and class with 5% and 10% level of significance and *p*-values of 0.099, 0.000 and 0.017, respectively. In the first control variable of gender, the group for male gender scored the highest mean rank at 62.58; in comparison, the group for female gender held a rank of 62.58.

Table 8.87: Significance of Control Variables on the Statements: *Which particular industry would you like to work for in the future?*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Which particular industry would you like to work in the future	Gender	Male Female	75.63 62.58	MWU Test	.099**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	86.68 48.20 65.41 116.00 15.50 79.17 100.50	KW Test	.000*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	39.50 75.97 73.67 54.00 44.20	KW Test	.017*

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

For the second control variable of faculty, with a significance level of 5%, the highest mean rank was that of Pharmacy with a value if 116.00; this ranking was followed by

the group category assigned to Other with a value of 100.50. The lowest value is for pharmacy at 15.50. In the final control variable of class, the highest mean rank was for the upper middle class category with a value of 75.97 and it was followed by the middle class category with a value of 73.67. The lowest value is for the working class category at 44.20.

8.11. DETERMINING FACTORS OF THE PERCEPTIONS ON AWARENESS OF THE GOVERNMENTAL POLICIES RELATED TO A KBE

Since KBE is an often referred topic and policy matters in the policy and academic circles for Qatar's future, this section aims to identify if demographic factors as control variables have any significant differences in terms of their awareness of the governmental policies related to transforming Qatar into a knowledge economy.

Table 8.88: Significance of Control Variables on the Statements: *Have you ever heard anything about government policies for developing Qatar's knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Have you ever heard anything about governments policies for developing knowledge economy	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	44.29 80.97 67.67 94.10 66.30	KW Test	.011*

Note: (*) Statistically significant at 5% level

Table 8.88 examines the significance of control variables on the question 'Have you ever heard anything about government policies for developing Qatar's KBE?', for which the only control variable found to be significant is class, with a significance level of 5% and *p*-value of 0.011. The highest mean rank was scored by the lower middle class category with a value of 94.10 and it was followed by the category for the upper middle class with a value of 80.97. The lowest value is for the upper class category at 44.29.

Table 8.89 examines the significance of control variables on the question 'Can you name any institution created in Qatar for KBE?'. The control variables found to be significant are nationality and ethnicity with 10% and 5% level of significance respectively. For the nationality control variable, the highest mean rank was scored by the participants belonging to other nationalities with a value of 24.02; those participants of Qatari nationality scored 17.50. The *p*-value is 0.067. For the control

variable of ethnicity, the highest mean rank was scored by the Arab-non-Qatari ethnic group with a value of 27.89. The lowest value is for the group representing those of non-Arab (or Other) ethnicity at 17.25. The *p*-value is 0.020.

Table 8.89: Significance of Control Variables on the Statements: *Can you name any institution created in Qatar for knowledge economy*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
Can you name any institution created in Qatar for knowledge economy	Nationality	Qatari Other	17.50 24.02	MWU Test	.067**
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	17.50 27.89 17.25	KW Test	.020*

Table 8.90 presents the results on the analyses of the significance of control variables on the statement 'What is the expected impact of Qatarization on employment possibility, since I do not have the skills it will not affect my life positively?' The control variables were found to be significant are age, faculty, and class. In the control variable of age, with a significance level of 5%, the highest mean rank was for 18-21 year-olds with a value of 76.30 and the lowest value is for 26-30 year-olds at 44.50.The *p*-value is 0.025. For the faculty control variable, with a significance level of 5%, Art and Science scored the highest mean rank with a value of 81.35; this was followed by Engineering with a value of 73.29. The lowest mean value is for *Shari'ah* at 32.50. The *p*-value is 0.029.

Table 8.90: Significance of Control Variables on the Statements: *What is the expected impact of Qatarisation on employment possibility: Since I do not have the skills it will not affect my life positively*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
What is the expected impact of Qatarisation on employment possibility: Since I do not have the skills it will not affect my life positively	Age	18-21 22-25 26-30	76.30 64.34 44.50	KW Test	.025*
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	81.35 66.24 73.29 30.10 44.50 32.50 53.42	KW Test	.029*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	82.54 57.06 74.89 54.00 57.10	KW Test	.078**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As for the question that 'What is the expected impact of Qatarization on employment prospects? It will create job opportunities', the findings are presented in table 8.91, for which the control variables were found to be significant are gender, age, faculty, and class.

Table 8.91: Significance of Control Variables on the Statements: *What is the expected impact of Qatarisation on employment possibility: It will create job opportunities*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
What is the expected impact of Qatarisation on employment possibility: It will create job opportunities	Gender	Male Female	66.41 77.86	MWU Test	.094**
	Age	18-21 22-25 26-30	76.53 60.27 62.17	KW Test	.061**
	Faculty	Art and Science Business & Economics Engineering Law Pharmacy Shari'ah Other	69.64 76.21 74.99 19.50 73.50 36.00 64.67	KW Test	.050*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	100.50 67.67 66.08 53.70 78.90	KW Test	.045*

Note: (*) Statistically significant at 5% level; (**) statistically significant at 10%

As can be seen in Table 8.91 the control variable of age, with a significance level of 10%, the highest mean rank was for 18-21 year-olds with a value of 76.53 and the lowest value is for 22-25 year-olds with a value of 60.27. The *p*-value is 0.061.

In the faculty control variable, with a significance level of 5%, the highest mean rank (76.21) was that of Business and Economics, followed by Engineering with a value of 74.99. The lowest value is recorded for Law at 19.50. The *p*-value is 0.050. In the final control variable of class, with a significance level of 5%, the highest mean rank was for the upper class group with a value of 100.50, followed by the working class group with a value of 78.90. The lowest value is 53.70 and it was provided by the group for the lower middle class. The *p*-value is 0.045.

Table 8.92 presents the significance of control variables on the question 'What is the expected impact of Qatarization on employment prospects? - There will not be any change'. For this, gender, nationality, ethnicity, and class were found to be significant as control variables.

Table 8.92: Significance of Control Variables on the Statements: *What is the expected impact of Qatarisation on employment possibility: There will not be any change*

Statement	Group (Control Variables)	Group Categories	Mean Rank	Test	Asymp. Sig. (p)
What is the expected impact of Qatarisation on employment possibility: There will not be any change	Gender	Male Female	75.30 63.18	MWU Test	.078**
	Nationality	Qatari Other	62.61 77.39	MWU Test	.026*
	Ethnicity	Arab-Qatari Arab-Non-Qatari Others	62.79 73.09 94.63	KW Test	.015*
	Class	Upper class Upper middle-class Middle-class Lower middle-class Working class	82.54 57.06 74.89 54.00 57.10	KW Test	.078**

Note: (*) Statistically significant at 5% level; (**) Statistically significant at 10%

As depicted in Table 8.92, in the first control variable of gender, with a significance level of 10%, the group for male gender scored a higher mean rank than that of the group for female gender, with a value of 75.30 in comparison to 63.18. The *p*-value is 0.078. In the second control variable of nationality, with a significance level of 5%, the highest mean rank was achieved by the subgroup for other nationalities with a value of 77.39; the subgroup for those participants of Qatari nationality scored a rank of 62.61. The *p*-value is 0.026.

In the final control variable of ethnicity, with a significance level of 5% and the *p*-value of 0.015, the highest mean rank was achieved by the group representing non-Arab (or Other) ethnicity with a value of 94.63; the lowest value is for the Arab-Qatari ethnic group with a value of 62.79.

8.12. CONCLUSION

The proceeding sections provided findings from a detailed analysis on determining the significance of the differences in the opinions expressed in relation to a number of questions and statements through a number of control variables. As mentioned, only the significant results at 5% and 10% significance level are presented.

In overall, as the analysis so far indicates, gender and marital status do not seem to have the same level of significance that is shared by other control variables such as

faculty and nationality. In terms of the faculty control variable, the subject of *Shari'ah* is revealed to be relatively insignificant, when compared to the other subcategories among the control variables. Such a position may be attributable to this discipline's inability to promote the use of critical thinking and analytical skills among its participants or due to their subsequent failure to develop general knowledge about Qatar and its economic progression. For the nationality control variable, it is interesting to note that non-Qatari nationals achieved high mean results, thus indicating their familiarity with, and knowledge of, both the questions proposed by the initial survey.

The most significant control variable appears to be that of faculty, given that it involves participants from academia who have knowledge about the state of Qatar's economy and its economic development. On a similar level, the control variable of degree produced varying results with the subgroups for undergraduate students, Master's Students, and those doing doctorates alternately achieving a higher mean rank.

Ultimately, the choice of control variables here has been appropriate with regard to this survey, since it encompasses the significant factors that determine the conditions of Qatari society and it has also enabled the collection of relevant data for analysis in the context of this project's stated intentions.

CHAPTER 9

CONCLUSION

9.1 A SUMMARY OF AND REFLECTION ON THE RESEARCH FINDINGS

This research aimed to assess Qatar's readiness to become a KBE and its progress towards this goal; this aim was also supplemented by a need to understand whether the stakeholders have any knowledge of these developments. To this end, business circles and university students were considered as potential stakeholders. Although it was possible to collect primary data from university students through a questionnaire survey, the business circles and policy makers showed little interest in an interview proposed by this study.

In reflecting upon the research findings, this section aims to develop the discussion through the research questions that were outlined in Chapter 1and that are as follows.

(i) What is the level and nature of economic growth and development in Qatar?
(ii) Can the Qatari economy be considered as ready to become a KBE?

In an attempt to respond to these research questions, chapters 5 and 6 provide various forms of empirical evidence on the subject.

To assess Qatar's readiness for its transition to a KBE, a particular method developed by the World Bank was employed: the KAM. The KAM aids the assessment of economic, business environment, social, and technological data related to Qatar in order to determine its level of readiness; it also simultaneously compares Qatar with other emerging economies. For this analysis, there are four pillars that are perceived to be essential and they include:

(i) A favourable business environment;
(ii) ICT;

(iii) The creation of a national innovation system;
(iv) Human resource development.

As is discussed in Chapter 5, the economic indicators provide evidence for Qatar's strong macroeconomic performances, which resulted in it becoming one of the most prosperous countries in the world with the highest *per capita* income. This success thus disproves the "resource curse" hypothesis, as Qatar has expanded its economy through FDIs in many other parts of the world, with the objective of sustaining and diversifying its economy away from the domination of oil and gas. In accordance with these economic diversification policies, Qatar has promoted its transformation into a KBE, since this will not only create new knowledge, but it will also allow Qatar to develop into an innovative country with economic value; such an act requires the allocation of large resources for R&D, innovation, education, and training. Despite the presence of this driving force (as is illustrated by the analysis in Chapter 6), Qatar still faces some important structural weaknesses and it has experienced problems in the course of its endeavours to complete the transition into a successful KBE. Indeed, the assessment of the 'four pillars' offers evidence for the strengths and weaknesses of Qatar's efforts to become a KBE.

The findings from this assessment further indicate Qatar's increasing economic power, yet this is somewhat undercut by the emphasis that it needs to maintain this position in order to be able to transform itself into a KBE. Consequently, in terms of a program of continuous reform, greater openness and transparency are required to attract the FDIs that are essential to the Qatari economy and which are, by extension, necessary for the transfer of knowledge and technology.

Although Qatar has made commendable progress in education, especially in comparison to other emerging countries, the performance of its ICT usage and literacy is still not at the level necessitated by a dynamic KBE. With regard to the innovative aspect of Qatar's "four pillars", evidence provided in Chapter 5 indicates its achievements and on-going endeavours in education, research centres, and innovation, yet Chapter 6 shows that innovation-related development requires greater transparency and the establishment of better connections between the private and the

public sector, academia, and foreign firms. As this innovation framework becomes more open, it should therefore offer a more encouraging vista for prospective SMEs.

Finally, the efforts to reform the education system should be continued, if not intensified, in order to create the necessary labour force needed to achieve and maintain the status of a KBE. Although the data analysis indicates that Qatar has allocated rich resources for innovation, the actual efficiency and effectiveness of these funds remains an issue. Chapter 5, moreover, suggests that the Qatar Foundation is a crucial institution for knowledge development, but in reality the domestic creation of knowledge has still not been achieved, since policies have been focused on the transfer of knowledge and technology up to now.

When referring to the initial research question on the level and nature of economic growth and development in Qatar, the analysis in chapters 5 and 6 clearly demonstrates that Qatar has made great progress in terms of economic growth. Evidence from various categories of economic development, such as HDI, competitiveness, and economic freedom, supports this notion, but it is also clear that this "growth" has not been fully converted into "development". Qatar, however, seems to be progressing in the right direction and it has ultimately made better progress than the other GCC countries.

With regard to the second research question on whether the Qatari economy can be viewed as ready to become a KBE, the analysis provided by chapters 5 and 6 shows that Qatar has progressed in the right direction through its investments in the aforementioned 'four pillars'. Thus, there is supporting evidence for the enormous work that has been done to attain the transformation to a KBE. When considering Qatar in terms of a KBE, there is, however, no evidence to suggest that it is already a KBE. Indeed, chapters 5 and 6 should be considered in relation to this notion, since they suggest that Qatar must undertake further proactive policies and create a framework in both the 'four pillars' and beyond to be perceived as a KBE.

Following the provision of a general conclusion for the initial research questions, this section focuses on the third research question:

(iii) What are the opinions of university students, who are essentially the future of the country, on the knowledge economy, the Qatari economy in general, and on the transformation of Qatar into a KBE?

In an attempt to respond to this research question, the two main stakeholders in the Qatari economy and society were identified: those in both business and policy circles, and university students. The former are essential to this study, as they at once affect, and are affected by, the process at the core of this project, yet despite several attempts, a large enough response could not be obtained from these circles and therefore the interview schedule with these figures could not be conducted. Although initially confronted with difficulties, the collection of primary data from university students was ultimately achieved. The aim of the questionnaire survey with the university students was to identify their knowledge and opinion of the Qatari economy and Qatar's attempts to become a KBE. It also sought to assess their opinions on issues of Qatarisation, alongside identifying their own individual readiness and progress towards knowledge acquisition. The data collected from the university students was subjected to various forms of statistical analysis in chapters 7 and 8, which include frequency distribution and inferential analysis by checking the significance of mean values.

The main issue for this study has been that of the large percentage of students who have remained neutral about the specified issues, a factor that does not provide the necessary confidence with which to reach a more definitive conclusion on the issues covered, especially since the neutral position sometimes reaches up to 40% of the participants. There are two explanations for this large weighting in the neutral position: namely, the students do not wish to express their opinion because they do not have any knowledge on the subject, or they have an opinion but they do not wish to express it in order to avoid being thought of as controversial and their real position may not be perceived as politically correct. Since this research is on the concept of a KBE, the behaviour of these students due to either of those reasons indicates that the idea of a KBE has not yet been established among the general population. This is something that the policy circles should bestow critical attention. It is also important to state that after the neutral position, the differences on the issues covered in this

study are not large enough to drawn emphatic conclusions from or to establish much stronger patterns.

With the exception of the large weighting for the neutral position, most of the participants expressed positive reactions towards Qatar's development and the concept of a KBE. These statistics were also replicated towards the ideas of knowledge and a knowledge economy in general. In addition, compared to the negative positions, more students opted for positive responses in relation to the notion of Qatarisation. Furthermore, the findings in Chapter 7 indicate that students are similarly developing their own knowledge base on the subject of a knowledge economy, as is evidenced by the 78% of the participants who admitted reading other books beyond their core text books (Table 7.11).

The primary data collected through a questionnaire from the university students was further analysed through inferential statistics by searching for significant differences among the opinions directed at the statements related to Qatar's economy, the concept of a KBE in general, Qatar's progress with regard to the status of a KBE, the necessity of a KBE for Qatar, Qatar's education and training efforts, and the readiness and progress of individuals towards a KBE. A number of control variables were used to analyse these differences between opinions, as is revealed by the data: gender, age, faculty affiliation, the degree that the student is studying, nationality, ethnicity, and class.

Table 9.1 offers a summary of the analysis in Chapter 9 in terms of illustrating the frequency of the significance of the control variables. Indeed, faculty affiliation proved to be the most efficient control variable, as it is found to be significant fifty-six times, followed by that of class at forty-one times, nationality with a reading of thirty-eight, age and ethnicity respectively achieved a figure of thirty-three, gender at twenty-eight, and the degree of the student appeared twenty-three times. This implies that faculty affiliation is the most important determining factor or variable on the opinions of students; the lowest determinant appears to be that of the degree which they are doing. The results similarly indicate that class is also an important determinant of the students' preferences, which should be considered as a surprise. The large number of expatriates within Qatar should, however, be considered to be

the reason for this somewhat unexpected result. Nationality is therefore the third most significant factor in determining the differences among the perceptions of the university students who completed the questionnaire survey.

Table 9.1 The Frequency of Significance of Control Variables

No.	Group Variable	Frequency of Significance	Ranking
1	Gender	28	5
2	Age	33	4
3	Faculty	56	1
4	Degree	23	6
5	Nationality	38	3
6	Ethnicity	33	4
7	Class	41	2

To summarise the results presented in Chapter 8, Table 9.2 provides further detailed descriptions of the sub-variables in each of the control variable categories. It thus aims to identify the most significant sub-variable in each control variable by referring to the frequency of the highest mean each time the sub-variable scored. This helps to establish a trend in terms of the control variables in the sense of which control variables have the highest determining role in the answers given to the questions by the respondents.

As can be seen in Table 9.2, it is apparent that the females within the gender control variable have been more vocal in their opinions when compared to the males, as they scored the highest mean 18 times. Thus, in the case of 28 statements, there are significant differences among the opinions in relation to gender and in eighteen cases females scored the highest mean value.

For the case of the age control variable and as is illustrated by Table 9.2, it proved to be significant in terms of 33 statements; out of thirty-three cases, the 22-25 age group scored the highest mean value, thus implying that this is the most important determinant sub-variable for the differences in the opinions expressed in relation to the specified statements.

In terms of the faculty affiliation, which was found to be the most significant variable, 22 students from the pharmacy sub-variable scored the highest mean ranking out of

the 56 significant cases, thereby suggesting that this is the most important determinant sub-variable in the group.

Table 9.2 The Frequency of the Highest Mean Ranking for Each of the Control Variables

Control Variable	Group Category/Sub-Variable	Frequency of the Highest Mean	Rank
Gender	Male	10	2
	Female	18	1
Age	18-21	7	2
	22-25	21	1
	26-30	5	3
	31-40	0	
	40+	0	
Faculty	Art and Science	5	4
	Business & Economics	8	2
	Engineering	0	
	Law	18	2
	Pharmacy	22	1
	Shari'ah	2	4
	Other	2	6
Degree	Undergraduate	13	1
	Master	9	2
	Doctorate	2	3
Nationality	Qatari	20	1
	Other	18	3
Ethnicity	Arab-Qatari	19	1
	Arab-Non-Qatari	7	2
	Others	7	2
Class	Upper class	23	1
	Upper middle class	4	3
	Middle class	1	5
	Lower middle class	9	2
	Working class	4	4

With regard to the degree control variable, 13 undergraduate students out of 23 significant cases scored the highest ranking, whereas Masters Students scored the

highest mean value in 9 cases. This result identifies the undergraduate sub-variable as the most significant and deterministic variable in this category.

Although the results in Table 9.1 demonstrate that the nationality control variable is significant in the case of 38 statements, Qatari nationals scored the highest mean ranking in twenty cases according to Table 9.2, whereas those of other nationalities scored the highest ranking in eighteen cases; there is then little difference between these findings, yet Qatari nationals seem to be more vocal in their opinions.

In contrast to the category assigned to nationality, ethnicity proved to be the more efficient variable, being significant in the case of thirty-three statements; in nineteen cases, the category for Arab-Qataris scored the highest mean value in determining the results from among the significantly different opinions. The category representing Arab non-Qataris, however, scored the highest mean value in only seven cases.

As established in Table 9.1, class was found to be the most significant variable for forty-one statements. The results in Table 9.2 show that the upper class variable scored the highest mean value out of twenty-three statements, indicating that it is the most important deterministic variable. The category for the lower middle class scored the highest mean value a total of nine times, making it the second most important sub-variable within this control variable.

Ultimately, the results indicate that a number of control variables play an important role in determining the responses given to each of the statements within the defined subject areas. In addition, a number of sub-variables proved to be more important than others in determining the results for the respective control variables.

With regard to the research question that emphasised the opinions of university students on the knowledge economy, the Qatari economy in general, and on the transformation of Qatar into a KBE, the actual opinions for each of the statements provided are determined by a number of control and sub-control variables. Aside from the statistics and the “large neutrality position”, it can be stated that there is generally a positive response towards a KBE and support for Qatar’s transformation into a KBE among university students. Caution should, however, be taken when interpreting the

results due to the large number of positions recorded as neutral in relation to certain topics.

It should finally be noted that despite Qatar's indication of its intentions and policies towards becoming a KBE in the Qatar National Vision 2030 (2008) and in the Qatar National Development Strategy 2011-2016 (2011), about 55% of the student participants were not aware of these policies. This should therefore be considered as an important point for discussion, since the government needs to develop strategies for the dissemination of information on this topic and other issues.

In further reflecting on the results, the findings in this research provided evidence for Porter's model to be a useful way of developing Qatar into a KBE. Recalling from Chapter 2, Porter believes that one of the main determinants behind the attainment of a national competitive edge over rivals in the market is process and product innovation, rather than natural resources or cheap manual labour. According to Bennett (2001), companies must enhance their market positioning by turning their weaknesses into strengths, so as to increase their chances for industry survival.

Applying Porter's model to Qatar thus explains how there are four fundamental factors in this assessment: firm strategy, demand conditions, input conditions, and related industries. These factors can be broken down to explain how Qatar's products or services would be received within new environments, such as emerging nations, where they are non-existent. This factor therefore provides insight into the context that shapes Qatar's strategy in accordance with rivals in the market (Findlay, 2000: 6-9).

Porter's National Diamond Theory, thus, proffers five points of competitive strategy that Qatar can employ as a means to get ahead in global industries; its corporate strategy must then be adapted to the needs of the new society and upgraded to accommodate the specific economy that is being invested in by its firms, as evidenced in the preceding chapters. Porter has several theories on strategy, but it is the National Diamond Theory that illustrates how an edge can be obtained over market competitors through the use of investment resources, innovative new products, and employees with advanced skills. Support for Porter's theory relies on the capital

opportunities that may come from foreign investments and on the overall goals accomplished by the Qatari corporations that become MNCs. Porter's model endeavours to explain the competition that exists within Qatari industry, allowing Qatari MNC businesses to have a better chance of overtaking powerful rivals that may otherwise be a threat. Importantly, the microfoundations of the Porter Model indicate that knowledge beyond capital and labour is an essential element for Qatar to remain at the competitive edge for sustainable development and growth. Accordingly, Qatar can employ KBE strategies as a means to get ahead in global industries; its corporate strategy must then be adapted to the needs of the new society and upgraded to accommodate the specific economy that is being invested in by its firms.

9.3 POLICY RECOMMENDATIONS OBTAINED THROUGH REFLECTION ON THE RESULTS

The Qatari government has made important progress, yet the 'four pillars' still require further investment and development. In response to the need for future policies to enable Qatar to become a KBE, this section thus highlights some potential recommendations.

The Qatari government can further transform its society into a knowledge economy through the creation of a Knowledge Management Job Skills Free Zone (KMJSFZ). By incorporating leadership, teamwork, communication, and the empowerment of women into the HRM and KM strategies in the KMJSFZ, the country's entire economy will benefit from additional knowledge, job skills, and work experience. As a result of working with international universities and private sector companies, the Qatari government is able to develop strategic alliances that will help it upgrade the country's KM strategies and job skills by adopting globally-benchmarked best practices and HRM policies within the country's colleges and companies.

Since there will be some barriers to the implementation of a KMJSFZ, there must also be various methods in place to develop the Qatari economy and thereby create a more knowledgeable society. These methods will include conflict resolution management, risk management, and other forms of contingency planning that will support the initial KM strategy implementation. The KMJSFZ can be successful in terms of aiding

Qatar's transition to a knowledge economy by supporting the policy of Qatarisation with governmental backing and a committed guarantee from the private sector companies to hire and train young Qatari university graduates. This government initiative for Qatarisation will require constant collaboration from the strategic alliances formed between the universities, multinational corporations, and the Qatari government in order for it to be successful in the long-term.

The overall analysis of the results from the survey and interviews shows that many Qatari nationals are being directly affected by the government's expansion and globalisation strategies. By attracting foreign corporations to Qatar so as to invest in the real estate and financial sectors, the government has jeopardised the future of the next generation of Qatari nationals. The results also indicate how many university graduates, combined with those students who are about to finish university, have had job interviews but have been unable to find work, due mainly to a lack of experience and knowledge about the workplace. These are then university graduates who have degrees, yet who have little or no actual experience of the real world, so that foreign expatriates are consequently selected instead of them for jobs.

The outcomes from other surveys and interviews demonstrate that despite the Qatari government's strategies to develop the country and bring in new companies as the logical response to the need to become a service-oriented knowledge economy, local Qatari nationals may suffer from some negative effects of globalisation, such as tough job competition. These results also highlight the existence of fewer jobs for Qatari nationals, a possible decrease in the adherence to cultural heritage, and the more pronounced influence of westernisation on family life. There may equally be problems in terms of controlling the younger generation of Qatari nationals, akin to the situation in Dubai, as they try to imitate the Western influences that are seen on television and in music videos. Further, the findings suggest that the Qatari government must find new preventative measures so that country does not make the same mistakes as Dubai with its own rapid expansion. An analysis of the survey results ultimately reveals that the Qatari government will face additional challenges as it continues to incorporate new reform policies into its expansion strategies. The key

to the successful implementation of these future strategies in the long-term is to focus on the integration of KM into every aspect of private and public sector organisations.

Qatar's government has to upgrade its human resource and development programs to create a critical mass in terms of knowledge and skills in an efficient and effective manner. It must also expand its educational and employment opportunities for Qatari nationals to ensure they can compete with foreign expatriates who may be more

Qatar's government must upgrade its human resource and development programs to create a critical mass in terms of knowledge and skills in an efficient and effective manner. It must also expand its educational and employment opportunities for Qatari nationals to ensure that they are able to compete with foreign expatriates who may be more qualified and experienced than these same nationals. Qatar's new reform policies will, however, help to develop its economy and aid the people in adjusting to the many changes involved in globalisation and expansion. The effects created by the Qatari companies that are expanding throughout the new markets during globalisation will have an impact on the entire country's economic structure. Thus, the banking and financial sector will be forced to adopt new ICT systems and online services in order to deal with the challenges of expansion into international markets. To compete with foreign banks entering the country, the banking services and products provided by the Qatari banks will also have to be improved in addition to the provision of extensive employee and management training, which is designed to prepare staff for full ICT integration. Within developing nations such as Qatar, the dynamics of different sectors relate to the changing market trends that will be affected by foreign direct investment (FDI) and expansion from other countries.

Qatar is one of the most logical choices for many global investors because of its high standard of living, the profitable returns on investment, the availability of a wide variety of recreational activities, social freedom, security, and its economic stability. Qatar is currently in the initial formative stage of globalisation and expansion as a result of the government's support for a strong and aggressive development strategy for the country. Due to its powerful position as the leading producer of natural gas in the world, Qatar is increasing its GDP on an annual basis and the government is using these advances to attract foreign investors to the economy. There are, however, both

positive and negative effects of such rapid economic globalisation and expansion, and it is up to the Qatari government to ensure that its national citizens are prepared for the changing dynamics of the next generation.

Although there are many problems associated with the implementation of a KMJSFZ, its benefits outweigh the risks and make the project a worthwhile investment. The Qatari government must upgrade its HRM and job development programs to adopt more western policies and practices. It must also expand its educational and employment opportunities for Qatari nationals in order to ensure that they can compete with foreign expatriates. The government should further provide more university scholarships and financial aid to those Qatari nationals who cannot afford the expensive tuition fees of universities or computer institutes, but who need a higher level of degree to ensure that they are able to attain jobs in the future. Qatar's new reform policies will, however, help the development of its economy and aid the people in adjusting to the many changes involved in globalisation and expansion.

The integration of an intranet portal into the Qatari government will create a permanent database of information and communications throughout its different divisions and related organisations, both increasing productivity and efficiency and allowing for prolonged alliances to be formed with universities and the oil and gas companies. The integration of this portal will also enable the use of more automated processes, leading to the restructurisation of both the ICT and KM divisions of the Qatari government, and to the implementation of new HRM ICT and computer training programs. Indeed, the integration of the intranet portal and its database of constantly updated knowledge and information will ensure that the necessary ICT training courses for employees and university graduates during job training are obligatory.

In addition, the intranet portal will also help to streamline the workplace and enhance productivity in all divisions of the Qatari government, thereby increasing the speed of document processing in terms of work placement and internship approval programs for university graduates, permitting them to gain employment and training. Furthermore, the portal will establish a network of permanent archival data that can be used for accounting, filing, memos, feedback, employee records, criminal records,

and as an online communications centre for all employees. This will promote and facilitate interdepartmental relations and enable these departments to remain informed about current and recently updated information.

Recommendations for the integration of this portal emphasise new ICT training programs, KM processes, software and hardware compatibilities, and strategic long-term planning. The overall advantages of implementing KM with an ICT intranet portal make this project a practical business venture not only for the government, but also for associated governmental departments and the public, since they can be connected through the portal's database once it is properly integrated. By simultaneously upgrading the Qatari government's KM recruitment and ICT training programs alongside the integration of the intranet portal, the KM project should have a long-term success, thus making it an example for other organisations.

The main recommendations that emerge from this study and which will help the Qatari government to meet their organisational objectives include:

(i) The appreciation of the significance of the concept of KM, especially with regard to how it can be useful in organisations;

(ii) The use of the understanding gained from various academic theories relating to KM and its overall benefits for organisations in order to be able to base the new KM program of the Qatari government on the Cisco case study, thereby employing it as a theoretical framework that can be applied to real situations;

(iii) The appointment of a knowledge manager to the Qatari government who will ensure the proper and long-term implementation of the KM program;

(iv) The immediate linkage of KM and HRM in the Qatari government as a means of enforcing the KM policies and procedures, further incorporating this strategic plan into the overall organisational policies;

(v) The implementation of an immediate and on-going KM educational awareness training program for employees and managerial staff that will allow for

consistent ICT and communication method upgrades to be made to the KM portal;

(vi) The establishment of a national KM initiative throughout the country in all universities and companies that promotes HRM on-going ICT training programs and competence building.

The knowledge manager should be a strong leader, able to instil motivational incentives clearly and concisely within employees. Indeed, this person should also implement the KM employee training and development program for all employees immediately, in addition to providing onsite training and field courses if necessary. The KM training program should follow the regular HRM training guidelines; it should, however, emphasise the specific set of KM policies and regulations that are most needed.

Once the knowledge manager has begun the KM implementation process, all employees and managers who will use the internal portal ICT system should be registered for the corresponding ICT classes in order to ensure that they are capable of integrating KM. All employee emails, reports, memos, feedback, and suggestions should go through the intranet portal; management should also rely on this feature as the fundamental basis of the KM system. Furthermore, the knowledge manager should have supervisory authority to oversee all KM policies, allowing them to put a KM continuous learning program in place that will help to provide the necessary skills, knowledge, awareness, and understanding of its workings for all personnel. ICT and KM tutors should similarly be acquired by the Qatari government in order to help with the implementation process of the KMJSFZ, since the government will initially need support when getting to grips with the system. All KM procedures should be approved by upper management and the knowledge manager; any changes should be considered for the benefit of the entire organisation, so that it can achieve its long-term goals. All KM methods should be linked directly to the Qatari government's organisational strategies, so that they are suitable and well-timed. The monitoring of the on-going progress of the KM strategy and its objectives is one of the most significant aspects of the KM integration process. Moreover, the initial integration phase of the KM implementation process should represent an on-going

course of action that may take between six months to one year to complete. Following this initial stage, there could be several more KM phases that must be undertaken in order for the entire KM strategy to be finalised.

As the KM strategic approach indicates, the Qatari government should develop all the country's universities and companies into learning organisations, so that Qatari nationals can improve their knowledge and job skills. By creating a KMJSFZ, the Qatari government can improve the overall learning processes needed by individuals, groups, universities, and organisations to develop the country into a knowledge society. To enhance the individual performance of knowledge and job skills, training programs that are located onsite and that are made use of through upgraded HRM initiatives will prove to be the most effective strategies.

For the improvement of group performance, expert HRM training programs can develop motivation, communication, teamwork, and innovation, so that these groups are better suited to contributing to organisational success. To upgrade organisational performance throughout Qatar in order to help the development of a knowledge economy, managers can enforce Qatarisation initiatives, thus allowing for improved HRM job skills training programs to give Qatari nationals work experience throughout high school and university. This will ensure that these students are better prepared to compete with foreigners for managerial positions when they graduate. KM communities of practice are an excellent way for Qatari universities and companies to gain greater global expertise and HRM training from other countries via communication and networking on online forums.

Recommendations that would enable the Qatari government to cope with the economic recession and to develop opportunities for its own nationals include the following:

(i) Prepare the country for its entrance into the future global society by creating the KMJSFZ to enhance KM and job skills throughout Qatar;

(ii) Develop new internships for job skills and work placement programs with universities and companies in order to allow Qatari nationals to gain work experience;

(iii) Promote recruitment to Qatari governmental agencies as leadership opportunities;

(iv) Create economic reform policies that force the private sector companies to enforce Qatarisation across all industries;

(v) Develop new employee performance evaluation and monitoring policies so as to determine efficiency needs and individual qualifications.

In relation to contextualising the findings of this study, others such as Hidalgo and Albors (2008: 6-7) also examined the obstacles potentially preventing the countries to develop into a KBE. Their points helps to further contextualise the findings of this study, as their identified challenges are:

(i) The new characteristics of the market, as it is a dynamic environment and constantly changes;

(ii) The new types of innovation;

(iii) The new needs of the stakeholders;

(iv) The new approach to innovation management;

(v) The new technology innovation assessment skills, which are essential for sustainable competitiveness;

(vi) The need for new innovation management tools.

For Qatar to develop a sustainable KBE, it has to consider these challenges, especially since the status of a KBE is not a static reality or state, but instead an on-going process. It therefore requires a dynamic approach when responding to these challenges. A KBE would, however, produce new stakeholders; which therefore have also political implications. Special mention must then go to the scenario where

traditional stakeholders in oil and gas industries could not match the requirements of the new paradigm, since the inevitable result would be the rise of these new stakeholders. It is thus important to ensure 'good governance', so that all of the stakeholders can be aware of the changes required for the transition to a KBE.

Despite such recommendation, the identified macro, micro and political challenges and obstacles are important to consider in developing strategies towards KBE in Qatar. In particular, an essential issue is the implementation of such policy recommendations, as in traditional societies such as Qatar despite the modern 'way of doing things' the policy development process remains rather 'traditional' through 'patronage' and 'clientelism' channels. Regardless of how essential is diversifying the economy through KBE for a sustainable future, the traditional stakeholders who have extensilvely benefited from 'oil and gas sector dominated' economic environment and social formation may create new challenges. In addition, the commitment of the authorities for the development of KBE beyond allocation of large sums for such projects is not clear. While discourse nature of commitment is clear in the speeches delivered, the same commitment in the implementation is still not there. This was clear when a number of policy makers, businessmen and academics were approached for interviews; as they refrained to participate in the interviews due to various reasons. However, it is suspected that such unwillingness is related to commitment. This is also evidenced in the lack of necessary policy infrastructure towards efficient and effective implementation of KBE strategies in the country. For example, a directorate for coordinating the KBE related policies and institutionalisation has yet to be created, without which the real commitment should be considered missing. Therefore, this study recommends that such a directorate (Directorate for Coordinating KBE Related Policies) has to be institutionalised without any delay for effectively and undertaking the implementation policies but also developing strategies and institutions for transforming Qatar into a KBE.

9.3 THE SIGNIFICANT CONTRIBUTION OF THE RESEARCH

This research should be considered as emergent research, since there has been considerable discussion of Qatar's transformation into a KBE, but no systematic study exists beyond that of the KAM (2004). Thus, this is, perhaps, the first systematic and

analytical study to consider the various aspects of the subject matter in question. It therefore represents a significant contribution to empirical case studies. Further, it provides detailed and specific analysis that could be helpful for theoretical frameworks to consider when conceptualising the notion of a KBE. In addition, it offers valuable analysis and information for policy makers and business circles in relation to the development of policies for the future of the country and for business organisations.

9.4 LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

Being an emergent study, this project did not adopt a particular theoretical framework, but instead it opted for an empirical study. To this end, three empirical chapters are supplied with rather rich findings on the subject in question. A theoretical model in political economy would, however, have strengthened the nature of the study. Future studies could therefore consider a theoretical framework through which the transformation of Qatar into a KBE could be explored. Indeed, this would strengthen the research and it would also provide a better explanation of the policy itself.

Furthermore, the research into Qatar's attempts to become a KBE should continue in order to identify its achievements and shortcomings. Thus, in addition to the research presented in this study, more specific sectoral and area-limited evaluative studies could be developed, such as on the efficiency and effectiveness of schooling in Qatar, coupled with an evaluation of the curriculum in Qatar directed at a KBE. This could also include an evaluation of the effectiveness of the generous funding extended by the Qatar Foundation, which is a source of R&D funding. What the outcome will be, how this outcome is materialised in knowledge, and how this knowledge has been useful to Qatar is, however, an open question. Thus, instead having organisations for the sake of 'having it', they should be evaluated against their main aims and objectives and, if necessary, certain policy and operational changes have to be introduced to achieve efficiency in research funding. Such areas of research cannot be limited to these two potential suggestions, but there are many other areas that require research. All these would provide a foundation through which further research could

be conducted, which would evaluate the progress of the country towards a KBE and it would also contribute to KM.

A more technical approach could be developed for assessing the efforts of Qatar to become a KBE. For example, an econometric model could be created to examine the factors that contribute to this process.

Future studies should finally consider the potential impact of the transformation into a KBE in terms of the new stakeholders through a political economy approach, as the transition from a simple economy into a modern economy resulted in a change its stakeholders, which in turn created a new bourgeoisie. During this stage of a post-modern economy for a KBE, it is inevitable that a new bourgeoisie will emerge to challenge the existing one. This development will have both political and political economy consequences and therefore research on this topic would be extremely valuable.

9.5 EPILOGUE

This research intended to explore and assess Qatar's readiness and potential for becoming a KBE. To this end and in addition to the evaluation of the economic, social, and technological progress made by the country, the perceptions of university students were also investigated.

As the foundational chapters (Chapters 2 and 3) and empirical chapters (chapters 5, 6, 7, and 8) indicate, this research fulfilled the aims and objectives identified in Chapter 1 by directly responding to those initial research questions. This study thus makes a significant empirical contribution to the field associated with the concept of a KBE through a case study, but more importantly it provides an empirical evaluation of Qatar's progress towards the status of a KBE and it further identifies the position of one of the crucial groups of stakeholders in the country's future: that of the university students.

APPENDICES

Appendix A - Questionnaire

Durham University
School of Government and International Affairs

QUESTIONNAIRE SURVEY

A Survey on the Perceptions of University Students on Developing Knowledge Economy in Qatar

I am a Ph.D. researcher at School of Government and International Affairs, Durham University- UK. Currently I am conducting a research on 'the Perceptions of University Students on Developing Knowledge Economy in Qatar' at the Durham University, UK.

The research requires the collection of primary data through questionnaire survey. Therefore, I am asking for your assistance, as a selected respondent, in providing your opinion on the following statements and question.

Considering that this questionnaire aims to measure the perceptions of university students, your opinions will be of particular value.

All data and information you provide will be analysed for academic purposes and treated as highly confidential. Therefore, it is highly appreciated if you could allocate sometime from your valuable time to respond to this questionnaire as soon as possible, which is essential for the successful completion of the research. Finally, a summary of my research results will be made available upon request.

Thank you very much in advance for your co-operation

Yours sincerely,

Mr Saleh
School of Government and International Affairs
University of Durham, United Kingdom.

SECTION 1: Personal Information

(Please tick (√) the appropriate box)

Gender:

☐ Male ☐ Female

Age:

☐ 18-21
☐ 22–25
☐ 26-30
☐ 30-40
☐ 40+

Which of the faculty are you studying in?

☐ Art and Sciences
☐ Business and Economics
☐ Education
☐ Engineering
☐ Law
☐ Pharmacy
☐ Shari'ah
☐ Sport Sciences
☐ Other …… Please state

Which degree are you doing?

☐ Undergraduate
☐ Masters
☐ Doctorate

Marital Status:

☐ Single
☐ Married
☐ Divorced

Nationality:

☐ Qatari
☐ Others *(Please specify)* _____

Ethnicity:

☐ Arab-Qatari
☐ Arab-Non-Qatari
☐ Others *(Please specify)* _____

Do you consider yourself as:

☐ Upper class
☐ Upper middle-class
☐ Middle-class
☐ Lower middle-class
☐ Working class

SECTION 1: QATAR'S ECONOMY

(Please tick (√) in an *appropriate box)*

Please state your opinion on the following statements:

	Strongly Disagree	Disagree	Do not know	Agree	Strongly Agree
1) Qatar's economic performance has been excellent	☐	☐	☐	☐	☐
2) Qatari economy is an oil-based *rentier* economy	☐	☐	☐	☐	☐
3) Qatari economy is a *productive* economy beyond oil and gas export	☐	☐	☐	☐	☐
4) Qatari economy is a *financialised* and *monetarised* economy (wealth is invested in financial and money markets domestically and foreign)	☐	☐	☐	☐	☐
5) Qatari economy is faced with the difficulty of developing a productive economy as country is geographically small	☐	☐	☐	☐	☐
6) Qatar should continue invest through foreign direct investment in other countries to provide sustainable economy	☐	☐	☐	☐	☐
7) Qatari economy should invest in technologically innovative projects					
8) Qatari economy is not an innovative economy	☐	☐	☐	☐	☐
9) Qatari economy does not spend enough for research and development	☐	☐	☐	☐	☐
10) Qatari economy is not doing well and needs change	☐	☐	☐	☐	☐
11) Qatari economy needs to go through structural change	☐	☐	☐	☐	☐
12) Qatari economy has to diversify in order to remain a competitive economy	☐	☐	☐	☐	☐
13) The long-run solution is to be become innovation based knowledge economy	☐	☐	☐	☐	☐
14) Performance of the economy is well but human development scores are worrying	☐	☐	☐	☐	☐

SECTION 2: QATARI ECONOMY AND KNOWLEDGE ECONOMY

Please state your opinion on the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) Knowledge can be considered as an 'economic good'	☐	☐	☐	☐	☐
2) Knowledge economy is based on the generation and exploitation of knowledge to play the predominant part in the creation of wealth.	☐	☐	☐	☐	☐
3) Knowledge economy is about the most effective use and exploitation of all types of	☐	☐	☐	☐	☐

knowledge in all manner of economic activity					
4) The idea of the knowledge driven economy is not just a description of high tech industries.	☐	☐	☐	☐	☐
5) Knowledge economy describes a set of new sources of competitive advantage which can apply to all sectors, all companies and all regions	☐	☐	☐	☐	☐
6) Knowledge economy describes the new emerging economic structure and the future shape of the economy	☐	☐	☐	☐	☐
7) The knowledge society is a larger concept than just an increased commitment to Research & Development	☐	☐	☐	☐	☐
8) In knowledge economy, knowledge represents the heart of value added – from high tech manufacturing and ICTs through knowledge intensive services to the overtly creative industries such as media and architecture	☐	☐	☐	☐	☐
9) Knowledge economy is the new conceptual fame	☐	☐	☐	☐	☐
10) Knowledge economy is only for the technologically developed countries	☐	☐	☐	☐	☐
11) Knowledge economy is *only* related with technological development	☐	☐	☐	☐	☐
12) Knowledge is the new source of economic value and growth					

Please state your opinion on the following statements related to Qatar and its knowledge economy?

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1) Qatar must develop a knowledge economy to remain globally competitive	☐	☐	☐	☐	☐
2) Knowledge economy strategy can overcome Qatar's problem of being a non-productive economy	☐	☐	☐	☐	☐
3) Knowledge economy describes the new emerging economic structure and the future shape of the economy for Qatar	☐	☐	☐	☐	☐
4) Developing knowledge economy is the only way for Qatar to survive and have a sustainable economy	☐	☐	☐	☐	☐
5) Since Qatar has to diversify its economy, the only way it can be globally strong and competitive is to develop a knowledge economy	☐	☐	☐	☐	☐
6) Qatar does not have a knowledge base to develop knowledge economy	☐	☐	☐	☐	☐
7) Since Qatar does not have technological base, it cannot developed into a knowledge economy	☐	☐	☐	☐	☐
8) Qatar does not have the capacity of the necessary professional skills to become a	☐	☐	☐	☐	☐

knowledge economy					
9) Knowledge economy is *only* one of the options for Qatar's future	☐	☐	☐	☐	☐
10) Qatar will survive without knowledge economy	☐	☐	☐	☐	☐
11) Knowledge economy cannot bring any positive change for Qatar	☐	☐	☐	☐	☐

Please state your opinion on society's support for Qatari knowledge economy efforts?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) The Qatari economic development strategy indicates that the economy and society supports the knowledge economy	☐	☐	☐	☐	☐
2) Qatari economy and society is ready to work towards the knowledge economy in terms of education	☐	☐	☐	☐	☐
3) Qatari economy and society is ready to work towards the knowledge economy in terms of development of professional skills	☐	☐	☐	☐	☐

SECTION 3: QATARI EDUCATION AND KNOWLEDGE ECONOMY

Please state your opinion on education and knowledge economy in Qatar:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) Educational development in Qatar can respond to the demand of the knowledge economy					
2) Qatar universities provide knowledge and skill for their students	☐	☐	☐	☐	☐
3) Theoretical knowledge is supported with empirical knowledge and practical skills in the Qatari universities	☐	☐	☐	☐	☐
4) Universities in Qatar provides self-confidence through teaching the most up-to-date knowledge	☐	☐	☐	☐	☐
5) Qatari universities are research based universities contributing to knowledge development	☐	☐	☐	☐	☐
6) The aim of university education in Qatar is not only graduating students but also helping them to develop skills so that they can be employable	☐	☐	☐	☐	☐
7) Qatar's university education helps students to develop critical thinking in whatever subject they study	☐	☐	☐	☐	☐
8) Qatar's university education helps students to develop creative thinking in whatever the subject they study	☐	☐	☐	☐	☐
9) Qatar's university education is away from	☐	☐	☐	☐	☐

producing student who can compete in the global economy					
10) Qatar's universities produce graduates with language skills	☐	☐	☐	☐	☐
11) Educational development in Qatar can respond to the demand of the knowledge economy					

Please state your opinion on the following statements related to Qatari education and knowledge economy:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) The educational qualifications of Qatari students are adequate for the needs of the private sector	☐	☐	☐	☐	☐
2) If the *qualifications* of the Qatari students are adequate, the private sector will be willing to employ them.	☐	☐	☐	☐	☐
3) Qatari students have the experience required by the private sector	☐	☐	☐	☐	☐
4) If the *experience* of the Qatari students is adequate for businesses, the private sector will be willing to employ them	☐	☐	☐	☐	☐
5) Qatari students with adequate education can have high performance in the workplace	☐	☐	☐	☐	☐
6) Qatari students ready to accept any job	☐	☐	☐	☐	☐
7) Qatari students concerned with their social prestige in choosing a job	☐	☐	☐	☐	☐

Please state your opinion on the following statements related to the skills of the Qatari individuals and knowledge economy:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) Qatari individuals have the *skills* required to satisfy the needs of the private sector	☐	☐	☐	☐	☐
2) The *productivity* of the Qatari individuals is adequate for the private sector.	☐	☐	☐	☐	☐
3) Qatari individuals with adequate *experience* can have high performance in the workplace	☐	☐	☐	☐	☐
4) Qatari individuals with adequate *skills* perform well in the workplace	☐	☐	☐	☐	☐
5) Qatari individuals are more productive than non-Qatari individuals	☐	☐	☐	☐	☐
6) Qatari individuals prefer private sector for offering stable and secure work	☐	☐	☐	☐	☐
7) Qatari individuals prefer to work in the public sector as they do not want to work hard					
8) Qatari individuals are ready to work in any location	☐	☐	☐	☐	☐
9) Qatari individuals are not keen to change their jobs	☐	☐	☐	☐	☐

SECTION 4: PERCEPTIONS ON QATARISATION

To what extent do you agree with the following statements on Qatarisation?

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) Government legislation exists to establish an efficient Qatarisation strategy	☐	☐	☐	☐	☐
2) This legislation is sufficient to achieve Qatarisation	☐	☐	☐	☐	☐
3) The private sector is aware of its social responsibility in encouraging Qatarisation	☐	☐	☐	☐	☐
4) The private sector has few rules of social responsibility regarding Qatarisation	☐	☐	☐	☐	☐
5) Qatari workforce does not have the adequate *skills* to replace the expatriates	☐	☐	☐	☐	☐
6) Qatari workforce does not have the adequate *experience* to replace the expatriates	☐	☐	☐	☐	☐
7) Qatarisation will be harmful for the Qatari economy	☐	☐	☐	☐	☐
8) Qatarisation will provide motivation for the Qatari individuals to develop themselves	☐	☐	☐	☐	☐
9) Qatarisation will help Qatar to develop the necessary skills and knowledge for the economy	☐	☐	☐	☐	☐

SECTION 5: PERSONAL KNOWLEDGE AND KNOWLEDGE ECONOMY

Do you read any other book other hand your school textbooks?

- ☐ No
- ☐ Yes

If yes to above question, please state what type of books do you read?

- ☐ Scientific/Technology
- ☐ Economy
- ☐ Current Affairs
- ☐ History
- ☐ Politics
- ☐ Fiction

If yes to the above question, would you please provide the number of books you have read in the following categories in the last one year?

Categories	Number
☐ Scientific/Technology	……
☐ Economy	……
☐ Current Affairs	……
☐ History	……
☐ Politics	…….
☐ Fiction	…….

Which of the following current affairs magazines do you read?

- ☐ Economists
- ☐ The Times
- ☐ Newsweek
- ☐ Local current affair magazine (please state the title)
- ☐ None

Which sector do you prefer more in seeking for a job?

☐ Public Sector ☐ Private Sector

Why do you prefer this particular sector?

Statement	Strongly Disagree	DisAgree	Neutral	Agree	Strongly Agree
a) It provides a stable working environment	☐	☐	☐	☐	☐
b) It provides stable income (salary)	☐	☐	☐	☐	☐
c) It does not require hard work and creativity	☐	☐	☐	☐	☐
d) It does not require to be competitive	☐	☐	☐	☐	☐
e) It does not require innovation	☐	☐	☐	☐	☐

Which particular industry would you like to work in the future?

☐ Banking/Finance
☐ Engineering/Sciences
☐ Education/Academia
☐ Research and Development
☐ Hospitality/Tourism
☐ Construction
☐ Food Industry
☐ Other Service industries
☐ Civil Servant

Have you ever heard anything about government's policies for developing knowledge economy?

☐ Yes
☐ No

If yes, how did you learn?

☐ TV
☐ Newspapers
☐ Internet
☐ Personal interest

Can you name any institution created in Qatar for knowledge economy?

Please state …….

Qatar Foundation is a…

☐ Social institution
☐ Is a charitable institution
☐ Is a college
☐ Is a research foundation

What is the expected impact of Qatarisation on your employment possibility?

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) Since I do not have the skills, it will not affect my life positively	☐	☐	☐	☐	☐
b) It will create job opportunities for me	☐	☐	☐	☐	☐
c) There will not be any change	☐	☐	☐	☐	☐

Thank you…

Appendix B – Interview Schedule

TOWARDS KNOWLEDGE ECONOMY IN QATAR

INTERVIEW SCHEDULE

Saleh Fetais

Q1. Would you please describe the economic realities of Qatar and the rationale and need for economic diversification.

……
……

Q2. Do you think as part of the knowledge economy, does Qatar has a potential to create such an economy?

……
……

Development of knowledge economy requires four pillars to be constructed efficiently; these are:

(i) economic incentive regime;
(ii) innovation
(iii) education; and
(iv) ICT.

Based on this formula, we would be grateful if you could kindly express your opinions on the state of Qatar vis-à-vis these four pillars as expressed in the following question:

Q3. Please explain if Qatar has an appropriate economic incentive and institutional regime that encourages the widespread and efficient use of local and global knowledge in the economy, that fosters entrepreneurship, and that permits and supports related social transformations?

……
……

Q3.1. Has there been any legislative and/or regulative change to improve competition and to reduce the size of government in the economy so that Qatar can easily engage with the globalised world? If yes, what is your position in such changes?

……
……

Q3.2. Are there initiatives to improve the incentives for national and foreign companies to invest in non-hydrocarbon sectors in Qatar?

……
……

Q4. Do you think Qatar has a society of skilled, flexible and creative people, with opportunities for quality education, jobs and life-long learning available to all?

……
……

Appendix B – Interview Schedule

Q4.1. Please discuss the responsiveness of the education system to societal trends such as skill development for the Qatari labor market; to collaborate and partner with parents, civil society and private sector; and to embrace the new opportunities of using ICTs to improve access and quality of learning.

……
……

Q4.2. The Qatar Labor Market Strategy is under implementation based on an elaborated labor market and workforce analysis under the auspices of the Qatar Planning Council with the help of the World Bank. If you are aware of this particular strategy, please state as to what progress has been made in the implementation of the recommendations of the National Labor Market Strategy for Qatar by referring to the nine priorities have been set:

(i) Improving the labor market information system;
(ii) Building capacity for labor analysis and manpower planning;
(iii) Developing a national qualification framework;
(iv) Understanding the male education deficit better and the needs of the disadvantaged and the population at risk;
(v) Redefining Qatarization as a flow;
(vi) Establishing a national body for the coordination of workforce development;
(vii) Improving the system of granting visas to expatriate workers;
(viii) Moving away from a "public sector employment/benefit system";
(ix) Developing accompanying regulations to support the new labor law?

……
……

Q4.3. Considering that financial sector is an important area where Qatar can compete in the region and can reach to competitive edge. Has there been any specialized effort and strategy developed in the education sector so that Qatar's attempt to be the leading country can be achieved in conventional and Islamic finance?

……
……

Q5. Please explain whether Qatar has a dynamic information and telecommunication infrastructure, that provides efficient services and tools available to all sectors of society;

……
……

Q5.1. Which elements of the National ICT Strategy and action plan have been implemented so far?

……
……

Q5.2. What are the experiences gained with the E-government initiative so far?

……
……

Q5.3. Has Qatar developed laws and regulatory frameworks to promote e-commerce activities?

……
……

Q5.4. There has so far been limited success in stimulating Qatari companies to use the Internet to promote their businesses. Are there specific initiatives to stimulate Qatari companies to explore the business opportunities using the Internet?

……
……

Q6. Please explain do you think in terms of getting ready for knowledge economy, Qatar has an efficient innovation system comprising firms, science and research centers, universities, and other organizations that can tap into and contribute to global knowledge, adapt it to local needs, and use it to create new products and services?

……
……

Q6.1. How could an overall vision with corresponding strategies for promoting innovation policies in Qatar be developed? Which would be the key organizations implementing the visions and strategies?

……
……

Q6.2. Are there any support mechanisms available to facilitate companies in their adoption and adaptation of new technologies such as technological or innovation service institutes aiming at facilitating innovation in enterprise?

……
……

Q6.3. How could cluster development be facilitated in Qatar e.g. around high priority clusters such as health, education, hydrocarbon, tourism, construction, infrastructure and ICT?

……
……

Q7. Since Qatarization is considered as an important pillar in the strategy for knowledge economy, do you think that realistically it can help for such an aim in the short-run and long-run?

……
……

Q8. A specialised report on the subject matter on Qatar states that "Qatar's overall development pattern in all four of the knowledge economy pillars … does not appear to have changed significantly in terms of the knowledge economy readiness during the past decade". Would you please comment on this?

……
……

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